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Insects

PART 12—Tabanidae

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Catalogue of Indian Insects.

PART 12.—TABANIDAE.

INTRODUCTION.

A systematic catalogue may be one of three kinds. It may summarize chaos, may mark a stage in the development of our knowledge of a group, or it may be the logical outcome of a finished and "final" revision. Of those in the first category, the immortal "Catalogue of the Diptera of South Asia," by van der Wulp, is a classical example, whilst the writer's "Bombyliidae" in the present series is a type of the third, although in few groups of plants or animals can it be said as yet that our systematic knowledge is approximately complete. The present part of the "Catalogue of Indian Insects" falls into the second category, summarizing the second stage in our knowledge of the family

Tallaridas in India. The first revision of the family was published ice Via Ricardo fourte a yests ago. Odd species have been cost och in the various allors and stray pieces Gold Conal systenomy made out As a basis for further, intensive, work on the family the present time is a convenient one to "take stock". The result shows how fragmentary our knowledge is. The very uncritical list of species in the three principal genera of the family throughout the World, recently outline ed he " General In suctorane" by de Ancoul, shows 170 species of Hamatopoke, I 130 of Toberous and 200 of Christops as known Allowing for those Eguro- being some that to ellage doing to yet aueffected synonymising, the Indian list of 31 Hamatopota, 75 Tabanus and 11 Chrysops appears remarkably poor. Seven other genera, three of them peculiar to the Region, with one or two species each, bring the Ladian total in the family up to 126 species, but only the genus Hamatopots, the Indian species of which are 18 per cent. of the World total, judicates that here the present-day knowledge of the genus has kept page with work in other areas. And not this genus is probably the worse I nown of the major toxed in fedia, in the serve that more

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and Pathankot), contain two undescribed species in Groups IV and V of the genus.

From the foregoing, then, it is clear that an enormous amount of more work has still to be done before the *Hæmatopeta*-fauna of India is properly known, and the necessary additions to our knowledge can be made by anyone who will take the trouble to collect specimens and send them in for determination.

Turning now to *Tabanus*, we see a very similar state of ignorance. The Indo-Gangetic Plain East and Burma each contain twenty known species, whilst Rapputana yields not a single record, and Central India

only one, being the locality given for a type by Walker three-quarters of a Century ago! Leese collected at least three undescribed species at Mohand, and the writer has recorded (Mem Dept. Agric India, vii,

106), an unidentified species from Chakrata in the Western Humalaya. From the table it will be seen that Group I in the genus is mainly confined to intruders from the Palearetic Region, to which Scistan really belongs, and it is possible that some of these species do not enter India proper at all. None the less, as Surra in that zone is of great importance, and its control an Indian problem, these species have been included in the key and the body of the Catalogue

The peculiarly coloured species of Group II seem to be inhabitants of hill regions and the country at their feet.

In the small Group III the only true Indian species, ditaniatus, is

more widely distributed in Africa than it is in Asia, but covers a larger area of the Old-World Tropics than any other species of the family, extending to China, where its only Eastern relative is found *T. sufis,* in this Group, is Palearctic, and just enters the Region in the Western Punjab.

Group IV are mainly Plains species.

The species of Groups V and VI, with strikingly marked wings, are Malayan, only entering India in zones with strong affinities with that sub-Region.

Group VII contains most of the commonly and widely distributed species, as well as some localized rarities. Most of the species extend into Malaysia.

Group VIII is very poorly represented in India It is Malayan, and its few Indian members are found in zones with strong affinities with Malaya

The Indian species of Group IX have little affinity with further East, and are centered in India. Truffcentris and Truffcentris are widely distributed in North India. The known Indian distribution of Truffcentris, the Khasia Hills and Meerut, is an excellent illustration of

our lack of knowledge. The two localities have little in common. And that they are both Oriental! There is a species not shown in the distribution table, peculiar, apparently, to the Nicobar Islands.

About half the species in Group X are purely Malay in. These found in India are, as regards the zones in which they occur, distinctly of Malayan affinds, and some of them extend beyond the embres the Empire eistward. One of the only own Taban de Lineau strong the Andamans belongs to this Group, the species occurring rise in Capital Burma and Sunatra.

The sub-genus Theoplectes, Group XI, is purely Western Huanlayan and an intruder from the Palearetic

The genus Chysops, table III, is probably better known that the two previous, owing to the striking appearance of these invests. Only one species, dispar III, is commonly and widely distributed, and at probably occurs throughout the sub-Region, except to the North West. C. flavocinetus, fusciatus and fixissimus are Malayan species only family in India in localities strongly associated taunisticully with further Fast. C. flavipes is a Palearetic species not entering It dis proper, and it modisioness is a Chinese species found in Yunnan, to which the Last remark also applies. The remaining species are of localized distribution, or are found in similar stations, such as hilltops. No species are known from Rajputana and the Eastern Himalays.

In spite of their importance, not only as probable carriers of Surra, but as worriers of domestic animals in general, it will thus be seen if at our knowledge, systematic and geographical, of the Tabanicke is fragmentary in the extreme. If the present volume stimulates Veterinary Officers to accumulate material, which is easily done, as the flies of most have to be searched for, but are to be found on their patients for the looking, it is hoped that within a few years a very different Catalogue, especially zoo-geographically, may become not only possible but necessary.

In conclusion, the writer has to express his great obligation to Miss G. Ricardo, who has read through the first dealt of the means empt, and favoured him with additional references and localities, as well as a series of notes on doubtful points of synonomy, which have been incorporated in the final manuscript for press.

CATALOGUE OF INDIAN INSECTS

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Aliff mark

*suvet unvok

S, Ceylon Hill*,

Sectors or caled

Marymor falsk,

;

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...**j**-*

4-

KEYS TO SUB-FAMILIES AND TO GENERA, ADAPTED FROM DE SURCOUF.

, Da controla.	
Hind tibes without spines No ocelli, at most a vestigial tubercle Hind tibes always spined. Usually three well-developed ocelli	Tabaninæ. Pangoninæ
Tabaninæ.	
 Apical portion of third antennal segment of three divisions Apical portion of third antennal segment of four divisions Third antennal segment simple, no basal 	Hamatopota Meig.
tooth or process	3
Third antennal segment with a basal tooth or process. 3. Antennæ arising from a frontal tubercle, third segment cylindrical. Palpi	4
thickened basally, bent, apically pointed. Antennæ not arising from a frontal tubercle, third segment conical.	Udenocera Ric.
Palpi elongate, subulate	Diachlorus O. S.
4. Antennæ not arising from a prominent tubercle. Frontal calli usually present Antennæ arising from a prominent tuber-	Tabanus Linn.
cle. No frontal calli	Neotabanus Ric,
Pangonin <i>æ.</i>	i
I. Third antennal segment of 8 divisions. Proboscis greatly prolonged Third antennal segment of 5 divisions. Proboscis normal	Corizoncura Rond.
2. Third antennal segment with a basal tooth or process. Third antennal segment simple. 3. What and second antennal segments long,	Gastroxides Saund.
A. The will second amount segments will,	Oliverana Maine

subequal Chrysops Meig.



First aniconal segment long, around short

4. Tibbe normal

Tibbe large and flattened. Whole aspect of insert bey-like

TABATINA.

Howlett, Ind. Inc. Life, 502-366, tab. brii. [general acet]; id., be, ed., tab Isii, 1-la. [life history of unnamed an.]: Lefroy, Pusa Ball. 7, (1947), 14-34, [proliminary sect. bitting flive of India 1: Hine, U. S. Dept. Agric. Bull., Tech. ser. 12 pt. 11, (1996). I habits and brocomies, N. Amer. spp. ? King, 4th. Rapt. Wellcome Lab., (11), 114-125, tab., Hife histories of some Tabanid larva-]; Hill, Bull Enton. Res., xii, 41-ii2, taba and L figs., [bionomics of some Australian sup.]; Hine, Bull. U. S. Dept. Agric., xliv, 57-60, xlvi, 23-25, (1904), I biomoraics of N. Amer. spp.l; March. Rockefeller Inst. Monog , xni. | carly stages. abst. in Rev. App. Ent., (B), iz, 122], Jones, Entomologist, Iv. 40-42, [habita of 33, British]; Pattern, Ind. Jo. Med. Res., vii, 735-750, tab. Ixvii and t. fig., [Mesopotamian spp.], Gaiger, Jo. Trop Vet. Sci., v. #5-71, [check list of parasites of Indian domestic animals]; Shiraki, Taihoku Expt. Str. Ball., (1918), [sect. of Forenousie spp.]; McVie, Boll. Butou. Res., iii, 223-224, [attracted by scale inserts, sweeping movements of taxai]; Neave. loc. cit., iii, 281,] if 55 numerous, 🐼 not biting 1; Path and Cragg, T. B. Med. Ent., 271-276, [general acct.], 294-305, [bionomics and lab. breeding M. Sure., Gen. Ins. Page. 175, 17. [copulation | 22, [bionomics], 183-

The state of

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194, [do.]; Isaac., Ind. Agric. Ent. Mem. viii, 53, [method of rearing], 57, [number of moults].

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こうかいとうこうとうこう いいきょうていかいこう こうできない ないない かんしゅう かんしゅう かんしゅう はんない ないない ないしゅう はんしゅう はんしゅう しゅうしゅう かんしょう かんしょう かんしょう かんしょう かんしょう かんしょう かんしょう かんしょう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう

Anatomy. Patt and Cragg, T. B. Med. Ent., 22-28, tab. iv., 4, tab. v. 1-4, [mouth parts], 35, [Prestomum], tab. xiv, 3-4, [ovipositor]. 69-74, [thorax], tab. xv, 3, [tarsus], tab. xx, 2-3, p. 98, [thorax and respiratory system 1, 102-108, tab. xxi, 1, 2, 5, 6, [alimentary tract], 124-5, tab. xxvi. [digestion], tab. xxvii, l, [nervous system], tab. xxviii, I, [genital organs], 421, [dissection]; Lloyd, Bull. Ent. Res., in. 96. I dissection of salivary glands 1; Vogel, Zool. Jalub., xlii(2), 259-282, tab.x, [mouth parts]; Cragg, Ind. Jo. Med Res. vii, 648-663, tabs. lxi, lxii, lxii, t fig., [secretion and epithelial regeneration in mid gut], Surc. Gen. Ins. Fasc. 175, 1-2, tab. i, 1-3. [head]. 3, [mouth parts], 6, [thorax], 7, [wing], 11 tab. i 4-5, [legs], 11, [abdomen], 12, tab. i, 6b-f. 7a-b, 8a-b, 9, 10, 11a-b, 12a-b, 13a-b, [3 genitalia], 15, tab. i. 14-15, [Q genitalia], 19, [larva], 21, [pupa]. Graber, Arch. f. mik. Anat, xvi, (1879), f Graber's organ]

Classification and Distribution. Sure:

Gen. Ins. Fase 175. 23, [classification], 201-204, [distribution]; Aust.,
Bull Ent. Res., xii. 431-455, [Stamese]; Pratt, Jo. Trop Vet. Sci., iv,
390-1, [principal F. M. S. spp];
Villen., Ann. Soc., Ent. Fr., (1905),
306-310, [Meigen's types at Paris];
Ric., R. I. M., iv. 111-258, tab. xiii,
321-399, tabs xv-xviii, [revision of
Oriental spp].

Enemies. d'Abreu, Proc. iiird. Ent. Meetg. Pusa, iii, 866, [birds]; Shiraki, Taihoku Expt. Sta. Bull., (1918), 5, [American and Australian Phonurus app.], Bull. Ent. Res., 1, 156-7, loc. cst., 1i, 182, [Bember app.]; Patel, Pusa Sci. Repts., (1912-20), 96, [Indian egg parasites], Flotcher, loc. cst., (1920-21), 47-48, [do.]; Surc., Gen. Ins. Fasc. 175, 22-23, [general notes]; Port., Petrograd, 1899, (Rossicé), (Summary in Zool. Centralbl., vii, 807, (1900), [methods of destruction].

Disease Transmission. Peace, Ja. Trop. Vet. Sci., i, 70, 91, [2 African spp. carrying Surra]; Lingard, loc. ed. i. 92-112, [carrying over of Tryp. seansi from season to season]; Holmes, Inc. cit., 1, 119, [hiting flies in Trypanosesmissis], Sergent, Ed & Et., lor est., 214-241, (abs. from Ann. Inst. Pasteur, [el Dehab]; Birt, Jo. R. A. M. C., vi, 653-58. (abs. Jo. Trop. Vet. Sci., i, 449-451), [Herpetriconads of 2 European spp.]; Laveran & Me-mil. Ann. Inst Pastour, xx, 296-303, (alm. Jo. Trop. Vet. Sci., i, 467), [trypanosomiasis of horses in Annam compared with Surra, Tabanidae carry]; Holmes Jo. Trop. Vet. Sci., iii, 157-172, tabs. xiv, xv, [investigation of surra outbreak, acct. of Naini Tal read]; Marra, Rev. Gen. Méd. Vét. xi, 49-57. (abs. Jo. Trop. Vet. Sci., iii, 409, [spreading epizootic aphtha] : Leese. Jo. Trop. Vet. Sci., iv. 107-133, [expts. on natural trans. of surra]; Fraser Symonds & Pratt, Pub. ix, P. M. S. Inst. Med. Res., (abs. Ind. Med. Caz., xlm, (11), 427-8, Jo. Trep. Vet. Sci., iv, 203-4; reprinted, loo. cit., iv, 345-389), [surra in F. M. S., 4 spp. of Tabanide carry]; Old, Jo. Trop. Mel.

Hyg., xii, (2), (1909) (reprinted. Jo. Trop. Vet. Sci., iv, 395-416, [Trypanosomiasis], Baldrey, Jo. Trop. Vet. Sci., vi, 271-282, tabs. xiii, xiv, I developmental cycle of surra in Tabanidæ]; Leese, loc. cut., vn, 19-32, Trop. Vet. Bull, 1, 15-17), [biting flies and surra], Patton, Ind. Jo. Med. Res., vii, 735-750, [summary of knowledge to 1920 on Tabanidæ and trypanosomiasis]; id., Arch. f. Protist., xv, 333-362, tab. xxx, and t. figs.. [Crithidia tabani]; Fletcher & S. White, Proc. ivth. Ent. Meetg. 222-235, Pusa, tab. freview of knowledge of vectors of surra]; Cross & Patel, Punjab Vet. Bull., (6), 1921, (abs. Rev. Appl. Ent., (B), x, 63, [surra, ticks carry, Tabanidæ only vectors]; Sergent, C. R. Soc. Biol. Paris, lyxxv, 408, (abs. Rev. App. Ent. (B), ix, 181, [Tabanidæ transmit Sarcocystis L

TABANINÆ.

Shiraki, Taihoku Expt. Stn. Bull. (1918), 87-88; Surc, Gen. Ins. Fasc. 175, 25, [key to genera of World].

KEY TO THE KNOWN INDIAN SPECIES OF HÆMATOPOTA. BASED ON RICARDO'S GROUPING.

[Generally applicable to \$\varphi\$ only].

В

3. Typical rings on mid tibise only, all tibus whiteh basally. Typical rings on nicl and hind tibise. 4. First antennal segment absorbable times and stout, at least as long as that asginent. First antennal segment normal in lengths and size. 5. Third antennal segment bread and flattened on first division, the last three divisions forming a moreon apply it portion. First segment merassate was equal to basal division of thank was entity tapened from base to apen.	trong 18
I no spots on face . A large, irregular shaped black spot on each side of antenna, reaching eyes .	repolsa Nei Nechaso Hir
The usual rosettes and spots on wings. Apical band of wing single 2. Abdomen red-brown, with very distinct median stripe. Abdomen yellow, an incomplete median	stristipensie Bran. [5] 2 mdans Big. 1984 Wik.
Apical band of wing single 2. Facial stripe yellow with brown dots. Wing markings very distinct Facial stripe black, broader. Wing	dissimilis Ric. 2 unisonau Rie. bessou S. W.

GROUP IV.

1. Apical band of wing double	2							
	annandalei Ric.							
	litoralis Ric.							
Abdomen with only hind margins of								
segments greyish	rhizophoræ S W.							
GROUP V.								
1. Wing with a pale, oblique transverse								
streak only	rubida Ric.							
Wing with the usual rosette markings .	2							
2. Apical band of wing double	3							
Apical band of wing single	4							
3. Hind tibiæ strongly fringed	javana Wd.							
Hind tibiæ not strongly fringed	demellonis S. W.							
4. Apical band very broad, other pale mark-								
ings very narrow	albofasciatipennis Brun.							
All pale markings of wing approximately	-							
equal in breadth, as usual	5							
5. First antennal segment incressate, as								
long as first division of third segment	lata Ric.							
First antennal segment narrower, not as								
long as first division of third segment	assamensis Ric.							
· ·								
GROUP VI.								
	Ŷ							
I. Apical band of wing double	2							
1. Apical band of wing double Apical band of wing single	2 7							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up 	•							
 Apical band of wing double	2 7 margınata Ric.							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	margınata Ric.							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	•							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric.							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	margınata Ric.							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric.							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric. 3							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric.							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric. 3 4							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric. 3							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric. 3 4 6 5							
 Apical band of wing double Apical band of wing single Apical bands very broad, almost filling up apex of wing	marginata Ric. 3 4							

5 .	Frontal extens rellandered in parent spot-	Amorta lla
	Frontal calling through that thrown partial	. L. B. S. A. W. W. T.
		The Property of Man
e	spots well a par, tool	大型 15年 20 288 3 6 mm · 多数mm
17,	First automal segment in control of	, ,
	long as first division of that day were	de fire esta llittle
	First untennal segment nerrower, int	e en e
tear .	nearly as long as whole third segment	tar introduction of the
7.	Apical band very broad, reaching from	
	outer to inner border of wing .	Ç
4-	Apical band of ning narrower	} ,#
8.	A broad black band on face .	profession for the
	No broad black facial hand	renderlations files
9.	Apreal band reaching from outer to major	
	horder of wing	{ * }
	Apical land not reaching from outer to	
	inner border	11
10.	Frons very narrow A large conditorin	
	dark spot in place of usual paired	
	spota	Justifras Aust.
	Usual paired spots present on from:	Januaria Hur,
11.	Hind femora and apical two thursts of	The county and reference for the last of
	hind tibie black fringed	Minorana B. W.
	Hind legs without noticeable fringes	fit
12.	First antennal segment more than itself as	,Å Mas
	long as third	
F	irst antennal segment shorter than this	
13.	A black band on upper part of face	success piesas Ric
- 	No black facial band, but usually a spot	hindeson Ric.
	on each side below	
	wer outhour morths.	enemposiala Ric.

1. Hæmatopota, Meigen.

Homatopota, Meig., Illig. Mag., ii, 267, 40, (1803), Wulp, Cat. Dipt. S. Asia, 66; Howlett, Ind. Ins. Life, tub. Ixii, 5, [unnamed sp. figd.]; Ric., A. M. N. H. (7) xviii, 113; id., R. I. M., iv, 521, [papers on Oriental spp. with keys]; Shiraki, Taihoku Expt. Stn. Bull. (1918), 88-92, [Formosan app.]; Patt. & Cragg, T. B. Med. Ent., 291,

292, 295, [feeding point], Sci. Toviposition 1; Cragg, Mem. M. O. Ind., lv, [structure of H. pluvialis].

Chrysozona, Meig., Nouv Class., 23, 34, (1800); Kert, Cat. Dipt., iii, 201; Verrall, "British Flies", v, 772, Treasons against adoption of name]; Aust., African Blood-Sucking Flies, 121, [do.], Surc., Gen. Ins. Fasc. 175, 29, [key to sub-genera], 31, [subgenera defined].

Austenia, Surc., Bull Mus H. N. Paris, 455, (1909); id., Gen Ins Fasc 175, 29, [sub-genus].

Parhæmatopota, Grunb., Zool Anz, xxx, 360, (1906); Sure, Gen. Ins. Fasc. 175, 36, | sub-genus |.

Potisa, Sure., Bull. Mus. H N. Paris, 455, (1909); id & Gonz., Dipt Vuln. Venezuela, n, 29; id, Gen Ins Fasc. 175, 30, [sub-genus].

albofasciatipennis, Brunetti.

Hamatopota albefasciatipennis, Brun, R. I M, vii, 458-60, tab. xxxvii, 1,1 (1912).

Chrusozona albofasciatipennis, Sure. Gen. Ins. Fasc 175, 32.

annandalei, Ricardo.

Hæmatopota unnandaler, Ric., R I. M, iv, 335-6, tab. xvii, 21,1 (1911); Brun, loc. cit., xxvi, 100, [3 descr.]

Chrysozona annandaler, Sure, Gen. Ins Fasc 175, 32.

assamensis, Ricardo.

Hamatopota assamensis, Ric., R. I. M., Nongpoh (Khasia)¹ iv, 343-4, tab xvii, 29, (1911)1

Chrysozona assamensis, Surc, Gen. Ins. [Dogaon] Fasc. 175, 32.

Bhowali (Kumaon)

Shillong Umling (Assam)1

[Baroma (Assam) Igatpuri (Bombay) 1*

Shillong¹

^{*} Records of localities enclosed within square brackets have been added from material in the Pusa collection.-T R. F.

beesoni. Seniar White.

Harnatopota brezoni, S. W., Meny Trept Agrie, Ind., vii, 115, tab xi, 4, 5 (1122), ICT, 1 note 11

Bandwirg , Il Tra. I

blinesia, Reado.

Humat quita bilimenta, Ric., R. I. M., 10, Igatfuri (W. Charret 350-1, tab. xviii, 34, (1911)1.

Chrysozona bilineae, Sure., Cen lus. Pasc. 175, 32,

brevis, Ricardo.

Hamatopota Ineris Riv. A. M. N. H. (7) xviii, 122-3, tab. vi. 19,2 (1466). 16. R. I. M., iv, 340 M), rab, xvi, 162.

Tripro Div Annahist *

Banzalores, s Pusish Madria Pres. (II. ¥

burmanica, Sentor White-

Brematapoles burnumura, S. W., Ment, Dept. Agrie. Ind., vis, 147, tab. xi, 6, 7.1 (1922); 107. | note |.

Beardances (Burn. 2,1

taller i

cana. Walker.

Hamatopota vana, Wlk., List Dipt. B. M., i, 207.1 (1843); Big., Bull. Size. Zool. Fr., xvi, 79³; ed. T. A. S. B., lx, 264³; Wulp, Cat. Dipt. S. Asia, 664; Ric., A. M. N. H., (7) xviii. 116 174; id. R. I. M., iv, 330°, | redescribed]. Cheysocona cana, Kert, Cat. Dipt., iff. 2027. Surc., Gen. Ins. Fase 175, 328.

N. Dugal. (Polsably from Terail. The collocior, Dr. Campbell. neral cam ahatronmoi (ride Hanker's 'Hunl'alamont, negale

cingalensis, Ricardo.

Hamatopota cingalensis, Ric., A. M. N. H., (7) xviii, 119, tab. v, 161, (1906); ed., R. I. M., iv, 351-2, tab. xvi, 152; Henry, Trop. Agric., xlvii, 1003. Chrysocona emgalensis, Surc., Gen., Inc.

Trinco Dis. (Ceylon) 1, 2

Poona (B. M. Colbu)

Anuradhapura (Ceylon) 1 2

Haberane (N. Ρ. ('eylon)" Matale (Coylon)

Hun (Port., Ind.)?

demellonis, Senior White.

۲,

Fasc 175, 32.

Hamatopota demillonis, S. W., Mem. Dept. Agric, Ind., vii, 146, tab. zi, 1-31, (1922).

dissimilis, Ricardo

Homotopota dissimilus, Ric., R. I. M., N Kanara¹ iv, 331-2, tab. xvii, 22⁴, (1911).
Chrysozona dissimilus, Surc., Gen. Ins.
Fasc 175, 33.

Tasciata, Ricardo.

Hamatopota fasciuta, Rie, R. J. M., iv., Shillong¹
358¹, (1911). Darjiling District (B. M., Chrysozona fasciuta. Sure. Gen. Ins. Fasc. Colln.)
175, 33.

fuscifrons, Austen.

Hamatopota cordigera. Big., Bull. Soc Zool. Fr., xvi, 763, (1891); id. Mem. Soc. Zool. Fr., v, 6262, Wulp, Cat. Dipt. S. Asia, 673; Ric., A. M. N. H., (7) xviii, 125, tab. vi, 214

Chrysozona conligera, Kert., Cat. Dipt., in. 202, Sure. Gen. Ins. Fasc. 175, 33.

Hamatopota fuscifions, Aust., A. M. N. H., (8) 1, 411, (1908), [renamed]; Ric., R. I. M., iv, 357-8, t.b. xvii, 195; S. W., Mem. Dept. Agric. Ind., vii, 1076.

Bengal¹, ², ³, ⁴, ⁵ Bondaung (Burma)¹ Mohnyin (Burma)^b

[Preoccupied by another H. cordigera, Bigot, from Abyssinia].

hindostani, Ricardo.

Hamatopota hindostani, Ric., A. M. N. Bababuddin Hills II., (8) xix, 2261, (1917). (Mysore)¹
Chrysozona hindostanti, (laps.), Surc. Gen. [Dodabetta (Nilgiris)]
Ins. Fasc. 175, 33.

immaculata, Ricardo.

Hæmatopota unmaculata, Ric., R. I. M., Kanara (Bombsy)¹ iv, 359-60, tab. xviii, 33¹, (1911). Bombsy¹ Chrysozona immaculata, Surc., Gen. Ins. Fasc. 175, 33.

inconspicua, Ricardo.

Hamatopola inconspicua, Ric., R. I. M., Igatpuri (W. Ghats)¹, iv, 358-9, tab. xviii, 31¹, (1911).

Chrysozola inconspicua, Surc., Gen. Ins.

Fasc. 175, 33.

indiana. Bugot

Harmatopola rodiuma, Big. Buil. Sec. Zool Fr. xvi, 751, (1201); d. Mem Soc. Zool Fr. v. tehr: Wulp. Car Dipt S. Asia, 67, the . A. M. N. H., (7) xvin, 124, tab. vi, 20; id., It. I. M., iv, 328-9, tab. xvii, 192, [redescribed]. Chrysozona indiana, Kert., Cat. Dipt. iii, 203; Sure., Gen. Inc. Fasc. 175, 33.

javana, Wiedemann.

Elve. Hiematopora javana Wil., Inpi 100, (1821), id , Aus. Zwent 1112 1, 2181; Widn. Pipt, Summer Exp. 3th tab. i. 124; id., Cat., Dipt. S. Asia. 56*: Wik., List Dipt B. M., i, 204; id., loc. est., Suppl. i. 297. 13: Bu Bull, Soc. Zool, Fr., xvi, 77: Rusheti. Ind. Ins Life, tab. Ixir. 5. Rec., R L. M , 1v, 340-3, tab. xvii, 25*; Fletcher, Pusa Sci. Reprs., 1920-21, 46, tab. iii. [bionomics, early stages]. S. W., Mem. Dept. Agric. Ind., vii, 1075. Chrysocona javana, Kert., Cat. Dipt., iti, 204; Sure., Gen Ins. Fase 177, 34.

Matable pita (America). *
Teograpio (Incarred)
English di Biotoca di

P121445 # · 建二十二十二 Bengal governor Linches Hiller Banker (Bihar's Primmaka (Burna) Rapitality, Burn of de Considerate de la Constant [Me 196.1. 2, 9, 9 Hilar Murris bills Publish Manilyani (Implical) Tirth that Problems Sourceit. EASIMET ! Nime is a ましてりますり書 Kathandan, Nathers Proxinces) (Nilgiria, S. India) i

Hamatopota asiatica, Rond., Ann. Mus. Civ. Genoa. vn. 461. (1875). [htps.]; Kert., Cat. Dipt., ni. 204.

? Hamatopota nigra, Wd., Dipt. Exot. 101, 7⁸, (1821); Kert., Cat. Dipt., ic., 204-5.

lata, Ricardo-

Hamatopola lata, Ric., A. M. N. H., (7) xviii, 121-21, (1906); id., R. I. M., iv. 344-5, tab. xvii, 262; id., loc. cit., iv. 4013; Edw., Jo. F. M. S. Mus., viii, 272, [?]; C. Vet. Dept. Mem., ii, tab. v, B, [?]; Fletcher and S. W., Proc. ivth. Ent. Meetg., Pusa, 2265.

Java¹, ³, ⁵ Sumatra ², ³ Borne ³ F. M. S.*

Khasia Hills 3, 9 N. Chin Hills 1, 2 Yunnan³ Mohand (U. P.)*

Sumatra, montana"

Chrysozona lata, Surc, Gen. Ins. Fasc. 175, 34.

latifascia, Ricardo.

Hæmatopota latifascia, Ric., R I M., iv, Shillong¹ 356, tab. xvi, 101, (1911).

Chrysozona latifascia, Surc., Gen. Ins. Fasc 175, 34.

limbata, Bigot

Hæmutopota limbata, Big., Bull. Soc. Zool. Fr, xvi, 781, (1891); id., Mem. Soc Zool. Fr., v, 6262; Wulp, Cat. Dipt S. Asia, 663, Ric., A M N. H., (7) xvin, 1154, id, R. I. M, iv. 325-65, [redescribed].

Chrysozona limbata, Kert., Cat Dipt, in, 205, Surc., Gen. Ins. Fasc. 175, 34.

litoralis, Ricardo

Hæmatopota litoralis, Ric, A. M. N. H., Puri (E. Coast)1 (8), xi, 546^1 , (1913)

Chrysozona litoralis, Surc, Gen Fasc. 175, 34.

marginata, Ricardo.

Hamatopota marginata, Ric, R. I M., iv, 347-8, tab. xviii, 321, (1911) Chrysozona marginata, Surc, Gen Ins

Fasc 175, 34.

montana, Ricardo

Hamatopota montanus, Ric., A. M. N. H, (8) xix, 225^{1} , (1917)

Hæmatopota montana, Patton, Ind., J. Med. Res., x, 67^2 .

Chrysozona montana, Surc., Gen. Ins Fasc. 175, 34.

rhizophoræ, Senior White.

Hamatopota rhizophorae, S W., Spol Zeyl., xi, 387, tab. 1, 1, (1921).

ricardonis, Sen or White

Hamatopota ricardoms, S. W., Spol. Ratnapura (Ceylon)¹ Zeyl., xmi, 209, tab. vni, 1-31, (1925).

Goalbathan (E. Bengal)¹ Tezpore (Assam)1

Bihar (B. M. Col.) | Saran (Bihar) |

Shillong1, 2, 3, 4, 5

Khasia Hills⁴, ⁵

Bababuddin Hılls¹ Coonoor2

Mahableshwar (B. M. Col)

[Santikoppa, Sidapur and Pol. betta (Coorg) Shillong, (Assam)]

Trincomali (Ceylon)¹

roralis. Fabricius.

Harmatopada raralia, Pic. vys. Antl. 107, 21 (1805) Wil. Dipt. best. 37 12; id., Anna. Zwo ff. Iron, t. 2705; Big., Bull. Soc. Zool, Fr., avi. 75 . id., T. A. S. B., Ix., 2614; Wik., Last Dipt., B. M., i. 208; Wulp, Car. Dipt. S. Asia, 660; Ric., A. M. N. H., (7) xviii. 116; ol., R. I. M., iv., 323 fi, tab. avii. 248. [rede-cribed]. Claysumon raralia. Keet., Car., Dist., is.

208, Sure . Hen. In Page 175 Av

· 释, 多如果约克 TE TOTAL BENEFIT OF PASSESSES · 编和 18 5 ~~ 新加斯勒斯的第一个 第一次同时 \$P\$196克克克兹 往,到177 Patrice of "酸"的"树"的 。""说什么!" 1'gw. 5 Nagant Mandata p. 1"? "咖啡有子,穿新特拉者高学多 Hadistand (Lieuxa) Mar in narahar i Naturalia of Ohias S. W.

Jac (* Bernons

rubida, Rienrdo.

Homatopous rubida, Ric., A. M. N. II.,
 (7) xviii, 120, tab. vi, 161, (1998); al.
 R. I. M., iv, 3,52, tab. xvii, 142, Pratt.
 Jo. Trop. Vet. Sci., 396.42, § F. M. S. distribution].

Potisa rubida, Surc., Gen. Ins. Fanc. 175, 31. Burma 1, 4

F. M. R.

striatipennis, Brunetti

Hamatopota striatipennis, Brim. R. I. Dehra Dunt, a M., vii, 460-1, tab. xxxvii, 22, (1912); S. W., Mem. Dept. Agric. Ind., vii, 1012.

Chrysozond striatipannes, Sure., Gen. Ins. Fasc. 175, 35.

tessellata, Ricardo.

Hamatopola tessellata, Ria., A. M. N. H., 1, 2 Trinen District (7) xviii, 120, tab. v, 71, (1906); id., (Ceylon) R. I. M., iv, 348-9, tab. xvi, 142.
Chrysozona tessellata, Surc., Gen. Ins. Fasc. 175, 35.

unizonata, Ricardo.

Hamatopota unizonata, Ric., A. M. N. H., (7) xviii, 118, tab v, 15, 15A¹, (1906); id., R. I. M., iv, 332-3, tab. xvi, 12, 13²; Pratt, Jo. Trop. Vet. Sci, iv, 390-4³, [F. M. S. distribution]; Longstafi, 'Butterfly Hunting,' 384⁴; Edw., Jo. F. M. S. Mus, vii, 27⁵, [?] Chrysozona unizonata, Surc., Gen. Ins. Fasc 175, 36.

Hakgala¹, ²
Newera Eliya²
Pundaluoya²
Hatton⁴
Galagedera [all Ceylon
Hills]

F. M. S.²
Sumatra (mountains)³

2. Udenocera, Ricardo.

Udenocera, Ric., A. M. N. H., (7) xiv,
352, (1904), Kert., Cat Dipt., in,
210; Ric., R. I. M., 361-2, Sure,
Gen Ins Fasc 175, 48

brunnea, Ricardo.

Udenocera brunnea, Ric., A. M. N. II., (7), xiv, 8551, (1904); id, R. I. M, iv. 362-3, tab xvi, 82, Kort, Cat Dipt, ni, 210; Surc., Gen Ins Fasc 175, 49, [description requoted], tab n, 12a

Kandy (Ceylon)1, 2

? Chrysops parallelus, Wlk, Proc Linn Soc., Lond., v. 2763, (1861) Batjan Ids 3, 4

² Diachlorus parallelus, Ric , A M N H , (7) ix, 372⁴.

3. Diachlorus, Osten-Sacken.

Diachlorus, O.-S., Mem. Boston N. H. S., ii, 475, (1876), Kert., Cat. Dipt., iii, 211; Surc., Gen. Ins Fasc 175, 49.

Diabasis, Macq., Suit à Buff, 1, 207, (1834), [nec Hoffmsg, 1819].

fulvescens, Brunetti.

Diachlorus fulvescens, Brun., R. I. M., vii, 456-8¹, (1912); Surc., Gen. Ins Fasc., 175, 51, [wrong date quoted].

Dha Kuri (Kumaon)1

KEY TO THE KNOWN INDIAN SPECIES OF T. IN INC.

[Adapted from Ricardo, Generally copies	tige to beauti this !
1. Eyes hare	Company XI
2. From with varying arrangement of calli	
Frons with no calli	
3. From with two separate calli	4
Frons with one square, narrow or oblong	
callus, which is always prolonged	
towards the vertex by a more or has	
narrow line	ŧ,
4. First callus usually transverse, second	
irregular in shape smallet. From-	
3-6 times as long as broad. Small	
*pp., 9-14 mm. long	į,
Both calli small, round, spor like, one	**
above the other	Though III
5. Thorax and scutchim concolorous. Ab-	
domen unbanded	Christy T
Scutellum pale haired. Abdomen with	• • • •
pale bands	Group, II
6. Wings with spots or hands	Carrotty, V
Wings distinctly dark marked, but not	A
banded. Large spp. 18-23 mm. long .	Group VI
Wings not noticeally marked	7
7. Abdomen with stripes and or bands .	8
Abdomen without stripes or bands .	Group X
8. Species with one or more usually con-	**
tinuous stripes on abdomen	Group VII
Species with median and or lateral spoty	•
on abdomen, not usually forming a	
continuous stripe	Group VIII
Species with pale bands and sometimes	*
spots on abdomen	Group IX
	,
Group I.	
1. Femora black or grey	2
Femora yellow	6
2. Femora black, front tibue pale in whole	٠
or part	3
Femora grey, front tibia b'ack	leleani Aust.

3.	Thorax and abdomen shining black, latter	
	with narrow red segmentations	hirtipalpis Ric.
	Thorax with grey tomentum, usually	
	more or less forming stripes	4
4	Frons 7-8 times as long as wide 1st	
	posterior cell. (in Q only) narrowed or	
	closed	eggeri Schin.
	Frons broader, 5 times as long as wide.	
	1st posterior cell normal	5
5.	Antennie black	glaber Big
_	Antennæ reddish	excelsus Ric.
6.	Abdomen black, with three grey stripes .	macer Big.
	Abdomen mainly black, unstriped, some	-
_	reddish laterally	7
7.	Abdomen black, from less than 3 times as	. r e strii.
	long as wide	pulverifer Wlk.
	Antennæ yellow. Frons 31-41 times as	Ć.
0	long as wide	8
ο.	all abdominal segments except last .	myl hallus Tan
	Abdomen with black median stripe,	Pasticouns xiv.
	extended to sides along hind margins,	
	and occupying nearly all of last 3	
	segments dorsally	adjacens Ric.
	-	•
	GROUP II.	
1	Brown species, scutellum and abdominal	
	bands yellow-haired	2
	Black species, scutellum and abdominal	
	bands white-haired	3
2.	Abdomen with 6 narrow bands. Front	
		flavicinctus Ric.
	Abdomen with 2 broad bands. Front	
_		leucocnematus Big.
3.	Abdomen with 2 bands. Front tibiæ	7 * 1 This.
	pale on basal two-thirds only	bicinctus Ric.
	Abdomen with 6 bands Front tibiæ	amain stee Die
	with only extreme tips black	Sexcinous Inc.
	GROUP III.	
1.	Abdomen yellowish, with median and	,
	lateral brown or black stripes	ditæniatus Macq.

Abdomen blackish grey with 3 series pule spots	अक्ष्री । जैंदर क्ष्म -
Group IV	
1. Abdomen brown, reddish basally, covered with grey tomentum, with two small greyish spots on each regment. Wings with no appendix. 7-11 mm.	30° 11° 11° 11° 11° 11° 11° 11° 11° 11° 1
Abdomen blackish brown, with median and lateral grey tomentore spots. Wings with an appendix. Long 13	·
mm	secon auffiners ffic.
Group V.	
1 First posterior ced open	9
First posterior cell closed 2. Frons narrowest at vertex Abdamen reddish, with small white median	
spots Frons narrowest anteriorly. Abduncen yellowish, with larger white median	
spots	naturyratha Big.
Group VI.	
1. First posterior cell closed or greatly	
narrowed apically	
First posterior cell open as usual	artiflamena Wilt.
2. Abdomen reddish brown, with grey tomentose bands and median spots. First posterior cell closed Palpi	
slender	nophodes Big
Abdomen brown, with grey tomentone bends but no median spots. First posterior cell narrowed in the margin. Palpi large, broad	albofasciotus Rig.
-	-
GROUP VII.	
1. Frontal callus oblong or narrow with linear extension. From at least 5 times as long as broad.	2 *

Frontal callus large, somewhat protu- berant, quadrate, with short linear	
extension. From 3-4 times as long	
as broad	12
Abdomen with lateral stripes and spots	* 10
in addition to the median stripe	3
Abdomen with no lateral spots, or only	V
isolated ones on second segment .	8
Frontal callus with a spindle shaped linear	· ·
extension	4
Frontal callus with a narrower linear	•
extension	5
Grey abdominal median and lateral	•
stripes all of same length	tenens Wik.
Median stripe beginning only on 3rd	WORLDON THE RELE
segment, lateral stripes ending on 3rd	
or 4th segment	struatus Fb.
Lateral spots large and distinct	6
Lateral spots small and indistinct.	
Thorax blackish. Abdomen reddish	
vellow	conicus Big.
Lateral spots small but distinct. Fore-	0076 W W 2018.
head narrower anteriorly than in above	
species	indiscriminatus Ric.
Median stripe composed of spots of equal	ANGONO TETOT
size, not very large	7
Median stripe composed of unequal sized	•
spots, those on 3rd and 4th segments	
very large and conspicuous. Femora	
blackish	speciosus Ric.
Thorax and abdomen lilac or blackish	,
brown. Femora blackish	rubidus Wd.
Thorax, abdomen and femora reddish	
brown , , ,	* priscus Wlk.
Median stripe grey tomentose, or white or	F
yellow harred	9
Median abdominal stripe golden haired .	11
Median abdominal stripe black, with a	
narrow grey stripe often apparent on	
it	abscondens Wik.
	, .

* Recently sunk by Austen in rubidus Wd.

9.	From burely half us unde as teriorly us at	
	vertex Small brown star w.	· 医四十二二二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二
	Props parallel shed in Learly so	} 1 3
Id.	Lurye black or middleds become aportion,	
	median ulatorumul steps marros	
	Femora black. Wings tinged brown	
	Brown species, median abdominal strips	
	broad, and with 2 round spots on 2 at	
	segment. Remora reddish. Wings	*
7 9	brown on fore border Frons parallel sided Abdurger was	frank hands
1.1.	Provent Limit of the second of the second second	
	lowah brown, medica esripe dult, indistruct	*************
	indistract. Front narrowed antereorly. Abdonese	n and a same na
	vellowish-brown, median sterpe brown.	
	Front femora yellowish. Wings.	
	brown, especially on fore larder	hadmarican th is
12.	Small black species Median abdominal	te dinner and the sea to the
	grey stripe beginning on third reg-	
	ment, lateral stripes ending on serond	
		juoundus Wik
	segment. Small brown species. Abdomen with	4*
	complete median grey stripe	pulcus Rie,
	George VIII.	
1.	From narrow, 6-10 times as long as wide	
	anteriorly, with long, narrow frontal	
	callus	
	Frons broader, 4-5 times as long as wide.	
	with large, square or pyriform callus ,	ā
3.	Brown, reddish or yellowish, median	
	sized or large species, median abdo-	
	minal spots triangular, greytsh or	
	yellowish	3
	Reddish species with black spots on 2nd	
•	and 3rd abdominal segments	*
3.	Abdomen reddish yellow with small	_
	median white spots	ruhicundus Mao
	Abdomen reddish brown, with long	
-	triangular median white spots, usually	
	joining one another	indianus Ric.

CATALOGUE OF INDIAN IN	SECTS 3
	fueromaculatus Ric. fuscomaculatus var. alte
ALCO MANAGEMENT OF THE PARTY OF	maculatus Ric.
Frontal callus square. Small black species with white-haired median	
abdominal spots. Legs blackish. Tibiæ yellowish	leucopogon Big.
Frontal callus pyriform. Large reddish brown species with median grey trian- gular abdominal spots. Legs reddish-	1 4
brown	discrepans Ric.
Group IX.	
Abdomen blackish-brown, the first 2 seg-	,
ments covered with grey tomentum. Abdomen of usual pattern and appearance	raftoentris Ph. (3)
Frons narrow, 7-8 times as long as broad. Frontal callus narrow, with a linear	
extension	3-
Front broader, 4-5 times as long as broad. Frontal callus large, with a stout,	
broad or spindle-shaped extension .	8
Large species, abdomen with very narrow pale bands	4
[Smaller species, abdomen with whitish bands	6
Brown species, scutellum and sides of	
thorax with pale tomentum Black species, no such pale tomentum .	albocostatus Big. 5
Abdomen fulvous segmented	explicatus Wlk. manipurensis Ric.
Abdomen not fulvous segmented	The state of the s
Frons parallel sided Frontal callus narrow, not reaching eyes. Antennæ,	
palps and legs black. Wings family	gray r , a manush ,
brownish Larger species Antennæ, palpi and legs	khasiensis Ric.
wholly black Smaller species. Antennæ black, palpi	nicobarensis Sahin.
grey. Basal half of front and hasal	No. a security
4-5ths of posterior tibize yellowish .	angustilimlatus S. W.
	**

_	Y% 7 5.	4
ŏ.	Brown or black equation	
_		\$1°
IJ.	Abdonon with traid waits been und large triangular median spot	and the Maria
	Bunds and spots on above a seroner	3,4 + 4 1 4 4 5 54 6 2 3
	Smaller sum a .	· I for the the falls
* 0	Abdomen reddish-yellow, dishered	
10.	apically .	
	Abdomen basally reddish-yeliow, but last	<i>λ</i> *
	four segment black	feet erections \$1.4.
11.	and .	\$ 4
	Femora yellow	The sea case a great a
12.	-	A STATE
	Sub-calles shuing Palps stout	
	and and a supplied to the supp	\$ 12 1 to accent . Franci
	Macro X.	
İ.	Black or brown species, from marrane	t
	auterorly. In himm bug	the s
1	Liark foundational states and a facility with	
	long	3
	Reddish-yellow species. 15.21 mm long	4
	Small species of all colours from black to	
d)	yellow under 16 ann, long	¥}
15,	Thorax poler than obdenien, with rel-	
	lowish tomentum and putescence	betweektow Dig
	Thorax not paler than abdomen, reduish	
71	brown with grey blue tousentum.	ter obscerns Wik.
ð,	Frome 7 times as long as broad. Pront	
i	coxe with white bair	bearshirtus Ruc.
į	Frons 10 times as long as broad. Front	
A	Large species, 20-24 mm. Tucras.	rita hadda Kis
72.	Large species, 121-24 mm, Tuorax,	
	antenna, palpi and legs yellow ,	
К	Smaller species, 18-19 min. long	5
v.	From parrowest at vertex. Legs wholly red.	4 / 2 20 14
		nigropistus Un q.
	From narrowest antoriorly. Legs black, tibis white at base	A . F. P. Sec.
ß		joidus Big.
W	From 5-6 times as long as broad .	í
	Frons 7 10 times as long as broad, narro-	4 5
	west anteriorly	1.2

7. From narrowest anteriorly, Small	tomanimeter C. W
reddish-brown species	8
8. Reddish-brown species. Frontal callus	
always distinct	9
Yellow species. Frontal callus often	
indistinct	flaviventris Big.
9. Thorax and scutellum blackish. An-	7 A
tennæ black at tip	10
wash bit also and down	11
10 Femora black. Wings slightly tinged	
brown	diversifions Ric.
Femora yellowish Wings grey, with	·
hyaline streaks in cells	demellonis S. W.
11. Abdomen reddish-brown, unicolorous.	
Legs roddish-yellow, femora often darker	subcinerascons Ric.
darker	gredences respons retor
grey tomentum. Legs blackish,	
femora yellowish	obconscus Wlk
12 Sub-callus bare, shining and tuberculous	
Sub-callus not bare, shining, tuberculous	14
13. Legs reddish-yellow, front tarsi darker.	to France Factors The
Abdomen yellowish	tuoerculatus Kic.
dish-brown or black	centonicus Schin.
	fuscicauda Big.
Femora yellowish	· •
Group XI.	
1. From with 2 transverse calli, subcallus bare and shining. Abdomen black	
	subcallosus Ric.
Frons with one callus. Subcallus not	000000000000000000000000000000000000000
bare and shining	2
2. Frontal callus black, claviform, with	
spindle-shaped extension. Abdomen	
black, reddish at sides of basal seg-	,
ments. Segmentations yellow haired,	
often produced medianly as basal	hirtus Ric.
Appeter	TANT NOOD WATER

Frontal callas small, indistinct indismen black, only reddich on sides of 2nd segment, the whole rescand althgolden-yellow pubessance.

[Not included in key ! I facures 1

The following species, originally described from India Or', are not included in the catalogue of r as they have been recognized, if at all, subsequently localities only, and were probably originally described.

Species.	Symmens	Paralest fras
basalıs Macq		Inilla Or
brunneus Macq.	, .	India Or.
orientalis Wd.	h 4	Flat India

serveller Macq. . pynousta Wik. . Fast India

4. Tabanus, Linnæus.

Tubanus, Lann., F. Sura., 462, (1761); Kert., Cat. Dipt , iii, 217 , R.c , R. I. M., iv, 111-258, frevision of Chiental spp.1; Shiraki, Taiboku Exp. Str. Bull., (1918), 119-123, 188-192 | Formosan spp.]: Part. & Crass. T. H. Med. Ent., 277-288. | key to Oriental spp.]: Szilady, Ent. Mitteil, iv. 93; Sure., Gen. Ins. Pasc. 175, 54-55. [subdivisions]; Steinheil, Arb. Lab. Warschen, 1896. Julia, in Zent. Centralbl., iv. 873, (1897) | month and method of suction I; Commall & Patt., I. Jo. Med. Res., ii. 509-95, [salivary secretion]: Hill, Bull. Ent. Res., xii, 41-59, figs., (bicoomics of 3 Australian spp.); Cragg. I. Jo. Med. Res., vii, 648-63, tebs. lxi-lxiii, [secretion and epithelial reguleration in mid-intestine]; Aust., Bull. Ent. Res., xii, 433-55, [Siamese spp. with key |; id., loc ett., x. 292-321, [Palestine spp. with key].

Aiylotus, O.-S. Mem. Boston N. H. S. ii, 426, (1876) . Shiraki, Taihoku Expt. Stn. Bull., (1918), 162, [Formosan .[.qqa [A valid sub-genus, used quite incorrectly by Bigot.] Therroplectes, Zeller, Isis, x1, 819, (1842). A valid sub-genus. Bellardia, Rond., Arch. Zool Modena, mi, 79, (1863). Invalid. abscondens. Walker. Tabanus abscondens, Wlk., Trans. Ent Burma¹, ², ³ Soc., v, 2751, (1860), Wulp. Cat. Dipt. N Chin Hills S Asia, 60², Big, T. A. S B. Ix, Dawnat Range 2643; Rie., R. I. M., iv. 1614; Kerl., (Tenasserun)4 Cat. Dipt., iii, 217, Sure. Gen Ins. Fasc. 175, 58. Chma4 adjacens, Ricardo. Tabanus adjacens, Ric., R. I. M., iv., 2481, Perso-Baluchistan (1911); Sure, Gen Ins. Fase 175, 58. Frontier¹ albocostatus, Bigot. " India "1, 2 Atylotus albocostatus, Big, Mem Soc. Zool. Fr., v, 6191, (1892) Tabanus albocostatus, Wulp, Cat. Dipt. S. Asia, 63², Kert. Cat Dipt., nii, 219; Ric, R. I. M, iv, 1903, [alboscutatus, (laps.), in key on p. 122]; Surc., Gen. Ins. Fase 175, 59 Not recognized since original redescribed by description. Туре Ricardo. albofasciatus, Ricardo. Tabanus albofasciatus, Ric, R. I. M., iv, Shillong 146-71, (1911), Surc., Gen. Ins. Fasc. 175, 59. angustilimbatus, Senior White. Tobanus angustilimbatus, S. W., Spol. Marlbe Valley (Ceylon)1 Zeyl., xii, 389¹, (1924) atrohirtus, Ricardo Tabanus atrohirtus, Ric., R. I. M., iv, Ceylon¹ 2091, (1911); Edw., F. M. S. Mus Jo. vli, 282; Surc., Gen Jus. Fasc. 175, Sumatra (Mount)2

GL.

auriflamma, Welser.

Publisher untilinence White let the oxfort to t P. M. . TW. Har. Map. in mount of well-Ind S Asia, 500 U.S., T. A S. H. No. 3 1 44 L. 2613 Kert., Ost Inja att. 258 Ric., R. L. M., iv. 14851 & W. Rosa Dept. Agric. Ind., vii 1645; S.iir. Gen, Las. Fair 175, 61

(11 5 - 7 3

auristriatus, Eroch

Tuburation to the 1th W. P. I. M. A. Gortoga & for Kamara). Ith It. (FULL Posts & for their thing is the in the x, 657, Sun., then Inc. Pres. 178, 21.

[The Burnese record O W Mera Day Age Rel, 50 West 2, an error st. chistorica struct

bienetus, Itaar lo

Tulianous Inventor, Die R. I. M., W. 1820. 3% (1911): Kaimki, Terhoku Burd. Stn. Bull. (1918), 231-40, tab. v. 32 · C. Vet. Dept. Men., ii, tale, vi 52; Fleicher & S. W., Proc. iv. Ent. Mes 'g. Pusa, 226, Patton, I. Jo. Med. Res., S. 67', Surc, Clen. Ins. Fasc. 175, 62

N. KATLOTA F. T. Mariania * 4 - 13,18 19" \$ I I'm i to 14 Counci the mark the first that the 图, 观, 礼, Formers.*

birmanicus. Bigot.

Abylotus birmanimus, Big., Mem. Sinc. Zool. Fr., v, 653³, (1892). Tahanus birmanicus, Wulp, Cat. Dipt. S. Asia, 693; Kert., Cat. Dipt., ili, 228; Ric., R. I. M., iv. 200-13; Shiraki, Taihoku Expt. Stn. Bull, (1918), 420-4, tab. viii, 8, xi, 13-14*; Surc., Gen. Ins. Fasc. 175, 62.

Burnin', 1, 1 Luchii Hill 4 Nongpoli (Kinssia)* * Occupation of the companies of F. M. S.3 Formusa.

brunnipennis, Ricardo.

Tabanus brunnipennis, Ric., R. I. M., iv, 160-1, tab. xiri, 91, (1911); Patel, Pusa Set Repts. (1919-20), 972; Aust. Bull. Ent Ros. 11, 444 : S. W. Mom. Dept.

Basi (N. Kanara)1 Gorakhpur ((P.) Puaga S. Malabara

Agric. Ind., vii, 1054; Surc., Gen. Ins. Fasc. 175, 63.

Mohnyin (U. Burma)⁴
[Bistupur (Bankura District)
Puri
Sidapur (Coorg)
Khurda
Santikoppa (N. Coorg)
Polibetta (S. Coorg)
Ranchi
Samastipur (Bihar)
Kasaragode (S. Kanara)]

Siam¹, ³

ceylonicus, Schiner.

Tabanus ceylonicus. Schin., Novara Reise,
 Dipt., 93¹, (1868); Wulp, Cat. Dipt. S.
 Asia, 61²; Kert., Cat. Dipt. iii, 233;
 Ric., R. I. M., iv, 223-4³; Surc., Gen.
 Ins. Fasc. 175, 64.

Tabanus nitidulus, Big., Mem. Soc. Zool. Fr., v, 6794, (1892); Wulp, Cat. Dipt. S. Asia, 65; Kert., Cat. Dipt. iii, 265. conicus, Bigot.

Atylotus conicus, Big., Mem. Soc. Zool. Fr., v, 6501, (1892).

Tabanus conicus, Wulp, Cat. Dipt. S. Asia, 63²; Kert., Cat. Dipt., iii, 236.

Atylotus abbreviatus, Big., Mem. Soc. Zool. Fr., v, 670³, (1892).

Tabanus abbreviatus, Wulp, Cat. Dipt. S. Asia, 63⁴; Kert., Cat. Dipt., iii, 217; Shiraki, Taihoku Expt. Stn. Bull., (1918), tab. vii, fig. 1⁵; Ric., R. I. M., iv, 152-4⁶; Surc., Gen. Ins. Fasc. 175, 58.

consanguineus Macquart.

Tabanus consanguineus, Macq., Dipt. Exot., i, 50¹, (1850); Big., T. A. S. B., lx, 264²; Wulp, Cat. Dipt. S. Asia, 59³; Ric., R. I. M., iv, 197-8⁴; Surc., Gen. Ins. Fasc. 175, 65; Kert., Cat. Dipt., iii, 236.

Ceylon¹, ² Trincomali (Ceylon)³

Malay Penin.³
Java², ⁴, ⁵
Sumatra³

"India", 3
Calcutta⁶

Java³, ⁴, ⁶ Formosa ⁵, ⁶ F. M. S. ⁶

Malabar Coast¹, ², ³, ⁴.

[Not recognized sieve original description. Redescribed by Riemando from type].

deniellonis, Senior Witte

Towanus denotioner, S. W., Spot. Zept. von serjan West. Lad. F. A.S. 3913, (1924).

discrepans. Ricardo.

Tabarus disorepuns, Ric., R. I. M., av., 185, tab. xiv. 173, (1911); Burc., Gen., Ins. Fasc. 175, 66.

ditæniatus, Marquart.

(t916).

Tolmous ditainistus, Mary Dist Fixed. i, 1285, (1899) . Wik., Last Ingo H. W., v. 206, 355 · Bezzi, Ann. Mus Cre. Genoa. (2) xii (32) 184; Anda., Refi Wello Lab. (1906) 57, L 22; al. ' African B. S. Flies,' 118, tab. vi. 822 Kert , Cat. Inpt , in. 238 , Brun . Spel Zeyl., vi. 1704; Ric., R. I. M., iv. 1313; Old, Jo. Trop. Vet. Sci., iv. 409; Gaiger, loc. cit. v, 69; Lefroy, Pusa Bull. 7, p. 21; D. Brock., Bull. Ent. Rev. i. 56.7 [habits]: King. he cit. i, 265-74. bionomics, larva descrit. Sonderson, loc. cd. ii, 111. [habits], Himpson, loc cit., ii, 215-32110, id., ker. est., m, 18511. Neave, los. cel., iii, 2168, 12 [eye colours]: King, loo. cit, v. 217-5. tab xxvi, 1, 2, 12 | bionomic si ; Ric , loc cat., vi. 10711 . Patt. & Cragg. T B. Ent . 295, tab. xlii. 7, [feeding point]; de Mello, Proc. ivih. Ento. Meetg. Pass. 44, 15 [1]: C. Vet. Dept. Mem. ii, tab. i. 110; Fletcher & S.W., Pres., ivila Epic. Meetg. Pusa, 226; Aust, Trons. R. S. T M. & H., xv., 264, abs, R. A. E. (D). x, 143¹⁷; Surc., Gen. Ins. Fasc. 175, 66. Tabanus bipunctatus. Walp. Leyd. Mos. Notes, vii, 75, tab. v, 5, 18 (1385). Tabanus buildulus, Mata. Thous. Inc. Jopan, addit. 11, 381, tab. xxii, 12,**

T. In the in Marketti Marketti 187 Property Balanderstein Proper 14.5 ** H= 14541 14 Marten fan A (malealla -Bulighai ((trima)* Port Indias Mohand (L. P.)** **显示产性郑**星 Parlianker (Cresse) 1) thusipur (Crows) i Dyra Lamail Khan (dajah) dawaadi Postan Tank (N. W. F.) Coinsbutore (S. India) Japan 41, 32 Chura!

 Tabanus fuscinerus, Macq., Dipt., Exot., i. 184, (1839).

Atylotus nigromaculatus, Ric , A M. N. H., (7) vi, 165,19 (1900), Newst., Ann. Trop Med, (1907), 44.

Tabanus pyrrhus, Wlk, Dipt Saunds., i, 47, tab. n, 15, ²⁰ (1850); Big., T. A. S. B, lx, 264, Wulp, Cat. Dipt S. Asia, 60, Coq, Proc. U.S. Mus, xxi, 31121, Kert., Cat. Dipt., ni, 272.

diversifrons, Ricardo.

Tabanus diversifions, Ric., R I. M, iv, 214-5,1 (1911); Sure., Gen. Ins. Fasc. 175, 66.

Buxar Duars¹ $Sylhet^1$ Darjiling District. 1 [Calcutta]

eggeri, Schiner.

Tabanus eggeri, Schin, Novara Reise Dipt., 81,1 (1868); Kert, Cat. Dipt., iii, 2392; Ric., R. I. M., iv, 2493; Aust., Bull. Ento. Res. x, 294, 301.5 Tabanus intermedius, Egg., Verh zool.-

389, (1859), bot. Ges Wien 1X, [nec Wlk. 1850]; Brauer, Denk Akad. Wien, xlii, 182, 42, tab. ni, vi, 42. Gob., Mem. Soc. Linn N. Fr., (1881), 21, 6; Pand., Rev. Entom., ii, 202, 4, Surc., Gen. Ins. Fasc 175, 72.

excelsus, Ricardo.

Tabunus excelsus. Ric, A M N H., (8) xi, 543,1 (1913), Leese, Ind. Vet Dept. coll. Notes, 2, tab iv, 132; S. W., Mem. Dehra Dun³ Dept Agric Ind., vii, 1043, Surc., Gen. Ins. Fasc. 175, 67.

Mashobra¹ Mohand (U. P.)2 Kangra Dist. (Crosse)

explicatus, Walker.

Tabanus explicatus, Wlk, List Dipt. B. Sikkim ¹, ² M, v, 328, 1 (1854); Big., T A. S. B., Khasia Hills?

Shillong¹ Khasia, Lower $Ranges^{1}$

Mauritius1

Réunion¹.

Pers Seistan³

South Europe² Asia Minor² Egypt 1, 2 Palestine⁵

Campbery ? Ix, 264, Walle Cat this is has been Kert, Cat Dipt, a. 240, Re. R. J. M., iv. 1912, Sun , ten Inc. Past 175, 67.

Havieinetas, Regardo.

Introduct forrespondent. His , R. I M., 20, 戴红脚 難信 130-1,1 (1911): C. Vet. Tept., Mem. n. Niteral. tab ii, 62 ; Floteker & S.N., From reft . 18 Ramarn Buto, Meerg., Pasa, 226; Sure., Gra. Malaria (C. Doc Fave, 175, 682. Apple of the color of the party of

Havissimus, Ricardo.

J48 3 Tabel as flagrescours, Ru R. I. M. v. L'alpateline 207, [1911]; Sur., Gen. In: Fac. 170, 68.

flaviventris, Bigot.

Fr., v. 657, ! (1832). Talanus flamentur, Wulp. Cat. Dust.

S. Asia, 63; Kert., Cat. Inpt., iii, 212, Ric., R. I. M., w. 213-4; 2 Suro , Con. ? Tone wein Ins. Fasc. 175, 6d.

Alylotus flavir alvis, Wer. Men. vov. Lood. Schenzer it.

Cevina 1 Calcuttu# 13 1562 4

fulvimedius, Walker,

Tubusus fulremedius, Wik., Last Dipt. + Nepalt B. M. i. 152. [1848]; Kert., Cat. Dipt., iii, 249; Rio., R.I.M., iv., 1972; Shiraki. Taiboka Expt. Stn. Bull., (1918), 399-407, tab. x, 14-15,"; Aust., Bull, Eur. Res. xii. 451 [Rie nec Wik.], Sure.. Gen. Ins. Fase 175, 6.1

Alghetas melanapygatus, Big , Mam. Soc. Formosa? 2 Zool. Fr., v, 651,4 (1892).

Tabanus melanopyyatus, Wulp, Cat. Dipt. S. Asia, 63 . Kert., Cat. Dipt., iii, 260. Atylotus pagodinus, Big., Mem. Soc. Zool. Fr., v, 654, (1892).

Tabanus pagodenus, Wulp. Cat. Dipt. S. S. Asia, 63, Kert., Cat. Dipt., iii, 267.

fuscicauda, Bigot.

Alglotus fuscicanda, Big., Mem. Soc. Zool. Fr., V, 658,1 (1592).

N. Chin Hill-

'India' . *

Cerlon 1, 2 Pundalnoya (C

CATALOGUE OF INDIAN INSECTS

Tabanus fusercauda, Wulp, Cat. Dipt. S. Asia, 632; Kert., Cat. Dipt. iii, 244; Ric., R I.M., iv. 217-88, S. W., Mem. Dept. Agric Ind., vii, 1064; Surc., Gen. Ins. Fasc. 175, 69.

Shewen (Burnus)4 Peradeniya (Ceylon)3 Andoman Islands⁵, ⁶

? Atylotus andamanecus, Big, Mem Soc. Zool. Fr., v. 668.5 (1892).

Tabanus andomanicus, Willp, Cat. Dipt. S. Asia, 63, 8 Kert., Cat. Dipt, iii, 221; Surc., Gen. Ins. Fasc. 175, 60.

Miss Ricardo (m s) has cancelled her Sumatra record.

fuscicrura, Bigot.

Ceylon 1, 2 Tubanus fuscierura, Big., Mem. Soc. Zool. Fr., v, 662, (1892); Surc., Gen. Ins. Fasc. 175, 698.

Not recognized since its original description.

fuscomaculatus, Ricardo.

Tabarus fuscomaculatus, Bsc., R. I. M., iv, 183-4, (1911); S. W., Mem. Dept. Agne. Ind., vii, 1062; Surc., Gen Ins. Fasc. 175, 69, subsp. alternaculatus, Rie, A.M N H, (8) xi, 544,1 (1913).

Myitkina Dist. (U Burma)1 Sikkimi¹ Masuria Kumaon² Manipur3

glaber, Bigot.

Tabanus glaber, Big., Mem. Soc. Zool. Fr , v, 6781 (1892) , Wulp, Cat. Dipt. S. Asia, 63; Kert., Cat Dipt., ili. 246; Ric., R. J. M., iv, 249-50, tab. xiv, 23;2 Patron, I, Jo. Med. Res. vii, 738-9, tab. lxvii, 2, t. f. 1 (2)3, Surc., Gen. Ins. Fasc, 175, 70

Helmand River-(Afgla istan)1, 2 Kashgar² Mesopotamia3 Porsian Seistan²

hirtipalpis, Ricardo

Tabanus hutipalpis, Ric., R. I. M., iv, 129, (1911); Sure., Gen. Ins. Fasc. 175, 70.

Bichiakoh (Nepal)¹

hirtistriatus, Ricardo.

Tubanus hirtistriatus, Ric., R.I.M., iv., Dawnat Range (Ter * 158-9,1 (1911); Surc., Gen. Ins. Fasc. 175, 70.

setim)1

The Upper Burma record, (A. W., Mem. Dept Agric, Ind. 30, 100 1- an error in determination.

F. M. H.

Tracking L

hirtus. Walker

Tabanus hieles, Wik., Inc. Samula, i, 52.1 (1850); Wulp, Cat. Dipt. S. Asia, Co; Kert., Cat Dipt. ni, 240; B.z., T.A.S. B., lx, 264, Garger Jo, Trop. Vet. Sci., v. 692, Sur . Gen Ins Fast 175, 71.

Theriaplectes history, Ric., R.L.M. Mider-u Kaman

Burnar

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Pheen (Simb D. T

Upried Provinces.

228-9.3 (191J).

hybridus. Wiedemann.

Tabanus hylmidus, Wd , Aust. Zweid. Ins., i, 557.1 (1828) . Wik., Proc. Linn Soc. Lond, i, 1102, Wulp, Cat. Dipt S. Asia, 59,3 Rec. R J M , iv. 1024, id . Bull. Ento. Res. vi. 407 , Surc., Gen. Ins. Fasc. 175, 71.

By Blue * F M R4 Borneca S. China *. *, *, *, 5

indianus. Ricardo.

Tabanus indianus, Ric., R.I.M., iv. 175-6.1 (1911), Shiraki, Taihoku Expt. Sto. Bull., (1918) 284-94, tab. vi. 12; Ric., Bull, Ento, Res., vi. 4063: de Mello, Proc. ivth. Ento. Meetg. Pusa, 411; Surc., Gen. Ins. Fesc. 175, 71.

Gan (Post, India)* (Samikuppa (Coorg) Polibetta (Corcg) Makut (Coorg) Morvara (Coorg) Poons 1 Fourhow (China)* Formess', 2 Hong Kong*

Caylou

Kadra (N. Kanara)*

? Tabanus mentitus, Wlk., List Dipt. B.M., i. 162,5 (1848), Wulp, Cat. Dipt. S. Asia, 59.

indiscriminatus, Ricardo.

Fasc. 175, 72.

Tabanus indiscriminatus, Ric., Arch. Naturgesch. lxxx, (A8) 123,1 (1915).

joidus, Bigot. Atylotus joidus, Big., Mero. Soc. Zool. Fr., Sibagar (Assam)²

v, 657,¹ (1892). Tabanus joulus, Wulp. Cat. Dipt S. Asia. 63; Kert., Cat. Dipt., iii, 252, Ric., B.I.M., iv, 211-22; Sure, Gen. lns.

juoundus, Walker.

Tabanus jucundus, Wlk. List Dipt. B.M., i, 187, (1848): Wulp, Cat. Dipt. S. Asia, 60; Ric., R.I.M., iv, 164 5, tab., xii, 108, id, Bull. Ente. Res., vi, 4074; C. Vet. Dept. Mem. ii, tab. iv, 125; Fletcher & S.W. Proc. ivth. Ento. Meetg. Pusa, 226; S. W. Mem. Dept. Agric. Ind., vii, 1056; Surc., Gen. Ins. Fasc. 175, 72.

Pundalmors (Crylon)²
Kohat N. W. F. P.⁸
Masuri ³, ⁴
Igarpuri³
(W. Ghats)
Mohand (U. P.)⁴
Hong Kong¹, ⁴

kakhyenensis, Senior White.

Tabanus kakhyenensis, S. W., Mem. Dept. Agric. Ind., vii, 113, tab. xii, 1(1922), 104, [note].

Mohnyin¹ N. Toungoo¹ Pymmana¹ (all U. Burma)

khasiensis, Ricardo.

Tabanus Lhassensis, Ric, A.M N.H., (8) iii, 487. (1909); id., R.I.M, iv 193-42, Sure., Gen Ins Fasc 175, 72 Khasia Hills 1, 2 Macrut 2 Sinabang (Suam) Penang (B. M. colin)

leleani, Austen.

Tabanus leleani, Aust. Bull. Ento. Res., x, 312-6, figs 13, 14, (1920); Surc., Gen. Ins. Fasc. 175, 73; id., Ann. Soc., Ent. Fr., xei, 238, [bionomics], Aust., Bull. Ento. Res., xiii, 2872; id., loc. cit., *vi, 17.

Kangra Valley¹, ² [Seistan Quetta Attock Near Srinagar (Kashmir)]

Algeria to Meropotamia¹, ²

leucocnematus, Bigot.

Atylotus leucoenematus, Big, Mem. Soc. Zool. Fr., v. 656, 1 (1892).

Tabanus leucoenematus, Wulp. Cat. Dipt. S. Asia. 63, 2 [leucoenematus, laps.]. Kert, Cat. Dipt., iii. 254; Ric., R. I.M., iv, 131-23; Patton, I. Jo. Med. Res., x. 674, S. W., Mem. Dept. Agric. 1ad., vii, 1045, Surc., Gen. Ins. Fasc. 175, 73.

Indual, 2
Indual, 2
Indual, 2
Indual, 3
Khasa Hills
Common!
Katha (U. Burma)
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eucohirtus, Ricardo.

Tabanus leucobirtus, Riv., A.M.N.H., (4) ii, 488, 5 (1989); vd., R.I. V. 11 198-198-1 Sure., Gen Inc. Part 177 74

eucopogon, Bigot. Atylotus barropagan, Big.,

Zool, Fr., v, 651, (1842). Tabanus bacopegor, Waln. Cut. Durt.

S Asia, 63, Kert, Cat. Pipt. ini. 254,

Ric., R.I.M., 10, 184, tal., xiv. 102. Sure , Gen Ins. Fast , 175, 75.

nacer, Bigot.

Atylotus macer, Mrz. Morn. Sen. Zand. Fr . v. 649, 1 (1892), 1 9 only [.

Tabanus macer, Wulp. Cat. Papt. &. Ama, 62 ; Ric., R.I.M., iv. 223 ; Apri., Tran. .

R.S.T.M. & H., Sv., 291. * Lide. R A E. (B) x, 143 f; Is me, Mem. Dept. Agric Ind., ix. (2) 21. tab v, 1, 6, vi. 1, fa,

vii, I, viii, la-d, [bionomies]. Tabanus incallosus, Ric., A M.N.H., (8)

in, 489-90,3 (1909); id., R.I.M., iv. 129-30, (1911); Part. & Crazg, T.B. Med Ent , 295. [feeding point], 297,

position]; Patel, loc. cit., (1919-20). 97, [do]; Fletcher, loc. cd., (1920-21). 47, 48, [parasites]; du Mello, Proc. ivth, Ento. Meetg Pusa, 41,5 [?]; C.

Vet. Dept. Mem. ii, 4, tab i, 29, Fletcher & S. W., Proc. ivth. Ento. Meetg. Pusa, 226; Surc., Gen. Ins. Fasc. 175, 62

Tabanus trichmopolis, Ric., A.M N.H.,

(8) xiv, 359-60, (1914). canipurensis, Bicords.

[oviposition], tab xlii, 1-f ; Fletcher, Pusa Sci. Repts., (1916-17), 96, [ovi-

Nagyur Dharn ar Combatore Taliparamba

In train between eswaram and Mr

Tabanus manipurensis, Ric., A.M.N.H., Manipur's (8) xi, 544,1 (1913), Surc., Gen. Ins.

Fasc: 175, 75.

melanognathus, Bigot.

Atylotus melanognathus, Big. Neuv. Ar. h. Mus H.N. Paris, (3) ti, 204. I (180a) Tabanus melanograthus, Wulp. Cat. Dipt S Asia, 62; Ric., R.I.M., iv. 2262. Tabanus nonoptatus, Ruc., R.I.M., W. 140-1,3 (1911), Sure, Cen. Ins. Fise 175, 77

Paramb (N. Dergali)3

Laos (Siew)¹, ²

monotæniatus, Bigot.

Atylotus monotarniatus, Big , Mem. Soc. Zool Fr., v, 655,1 (1892).

Tabanus monotagnintus, Wulp, Cat. Dipt. S Asia, 63², Kert., Cat. Dipt., iii, 262; Rie, R.I.M., iv, 159-60°; id., loc cit, iv, 1011, S. W., Mem. Dept. Agric. Ind., vii. 105⁵, Surc., Gen. Ins. Fasc. 175, 76

India 1. 2.

N. Khasia Hill-3 Nongrob (Kha-m) Sibsagar (Assum)2 Yunnan* Mobrym (C Burms).

nemocallosus. Ricardo

Tabanus nemocallosus, Ric, AMNH, Pusa¹, 2. (8) in, 490, (1999); id., R.I.M., iv. Jhelum Dist. 1372; Fletcher, Pusa Sci. Repls, (1915-16), 79, [bionomics]; vd., loc. cit., (1916-17), 97, [do]. Patel, loc. cit., (1919-20), 97, [notes]; Aust., Trans R S.T M. & H, xv, 264, [abs. RAE (B), x, 143], Sure, Gen. Ins. Fasc. 175, 76; Isaac, Mem. Dept. Agric. Ind., ix (2), 24, tal v, 5, vi, 6, 6a, vii, 6, x, 6a-e, [bionomics].

nephodes, Bigot.

Atylotus nephodes, Big, Mem Soc. Zool Fr., v, 656, (1892)

Tabanus nephodes, Wulp, Cat. Dipt. S. Asia, 63; Kert., Cut Dipt. in, 264; Ric., RIM., iv. 145-6, Surc, Gen Ins. Fasc. 175, 77.

Tabanus salvazai, Sure. Bull Soc. Ent . Fr. (1921) (19) 286, (Dec. 1921 or Juny. 1922), [var].

Naga Hills Sibaagar (Assam)¹

nicobarensis, Schiner

Tabanus accederensis, Schm., Novesta N Reise Dipt., SL, (1860), Walp. Ca., Dipt. S. Asia, 61; Kers. Cat. Dipt., iii, 261, Ric., R LM in 191-21, Sun., Gen. Ins. Fasc. 175, 77.

Steeland Liences, 2

nigropictus, Macquart

Tabanus nigropicus. Macq., Dipt., Exst., Indist. 2.
suppl. v, 24,2 (1855); Wulg. Cat. Dipt.
S. Asia, 60; Kert. Cat. Dipt., in. 205;
But., T.A.S.B., Ix. 261; Rec., R.I.M.,
Iv. 210-112; Sure., Gen. Ins., Fr.,
175, 77.

[Not recognized since original descriptions. Type red suched by Reci

obconicus, Walker.

Tabatus oberatious, Wik., Dipt. Saunels.,
 i, 54¹ (1850), Wulp. Car. Dipt. S. Asia,
 60. Kert., Cat. Dipt. ni, 256; Big.,
 T.A.S.B., Ix, 261; Ric., R.L.M., iv,
 215-6²; Surc., Gen. Ins. Fasc. 175, 77.

fentral ludos[†], Belgareita (Bengal)[‡]

optatus, Walker.

Tabanus opistus, Wik. Proc. Lunn. Soc. Lond. i. 111. 33.1 (1956). Welp. Cat. Dipt. S. Asia, 612; Ric. R.I.M., 10, 1395; Prett, Jo. Trop. Vet. Sci., 3964.3 [F. M. S. distribution]; Edw., Ja. F. M. S. Mus., viii, 275; Surc., Gon. Ins. Fasc. 175, 78.

Tabanus alboscutatus, Road, Ann. Mus. Giv. Genoa, vii, 156,4 (1875).

Tabanus equestris, Wulp, Layden Mus. Notes, vii, 77, 31, tab. v, 6, (1885).

orientis, Walker.

Tabassas orientis, Wik., List Dipt. B M., i. 152, (1848); Wulp. Cat. Dipt., S. Asia, 59; Kert. Cat. Dipt., iii. 267; Big., T.A.S.B., Iz. 2615; Rio., R.I.M., iv. 195-72; Baldrey, Jo. Trop. Vet. Soi., vi, 271-2824 (surra transmussion expets.); C. Vet. Dept. Memo. ii, tah.

Beleatelia (Beredi)
(Bangara (Bingalja
Dio.)]

F. M. S.

Bumatra (S.)

Borney', ", "

Nepal[†], ². United Provinces² Naini Tal³ Thandian: (Himalay: W. Blumo² Masari³ Donyayatli (Muroe)² Nu. 185, Fletcher & S. W., Pane, icche Ento Meetg, Pusa, 226; Save 14, 7 Ins. Fase, 175, 78. Ric., R I M., iv. 101.2
Tubanus consocius, Wik., Dipt. Saunde, i. 56, (1850); Big., T.A.S.B., 13, 261.
Wulp. Cat. Dipt. S. Asia, 60., Kert., Unt. Dipt. in, 226., Ganger, Jo. Trop. Vert. Sci., v. 69., Aust., Trop. R.S.T., M. & H., v., 201.7 [abs. R.A.I., (6) x. 113]

Jhelum Dist ⁷ Kangra Pist, (Crosse) [Dalhousie]

Yunzani

Mokanif

Sthing

Multiraria

Tabanus perlina, Wk. Inpt. Sams. i 56. (1850) Big T.ASB, Is, 264; Wulp. Cut Dipt. S. Isia, 60; Kert., Cut Dipt. ii, 208

The Barmese locality, (S. W. More Dept., Agric Ind., vu. 196), is an exported determination.

oxyceratus, Rigot.

Atylotus asyceratus, Big., Mem. Soc. Zoot Pr., v. 652, 1(1892).

Tukonas angeratus, Walp Cur. Dipt. S.
 Asca. 63; Kert., Cut. Dipt., iii, 267;
 Bic., R.J.M. 1v, 1952. S. W. Mem.
 Dept. Agric. Ind., vii, 1962; Surc., Gen.
 Ins. Fosc. 175, 78

India1

Cheens Force (Humalavas)² N. Chm Hill-² Masuri², ²

provincialis, Ricardo.

Tabanes prominents, Rie., A. M. N. H., (5) xi, 545.1 (1913); Suic., Gen. Ins., Fasc. 175, 80

nulcheilus, Loew.

Ą

Tubanus pulchellus, Lw., Verh. 2001-bot Cles. Wien, vm. 597, 26, 1(1858). Braner, Dink. Akad. Wien, Ahi. 206, 60, Kert. Cat. Dipc., in. 2712. Ric., A. M. N. H. (7) xvi, 200. Patron, I. Jo Med Res., vii. 730 S. tah. kvv., I. and fig. 1(1), 2 [probably local race of abuneratus Macq.]; Sure., Cen. Ins. Fasc. 175, 80

Taburus equinius, Ric., R. I. M., r., 218,9,1 (1911).

Arian Kasa (Travancase)! Kursenug!

Seistan 1

Mo opolanna¹, ⁸
Asia Minor²
N Africa²
Cyprus³
Perso-Atzhan Front or³

Taharus pateerifer. Will. 1961 Papt 11. Mile कार से अंग्रेसिंट के पार हो भी Ins. Fase 175, 89,

Tabanets passe Rw R. I M. W. Dil L mb zir 21 - (1911); Perce I do Med Reg vir. 741, by I the

puteus, Ricarda.

Tabanas paters, Hie., R. I. M. iv. 185-6, tab. viii. 11. (Pally, Sure . Ben. Inc. Puse 175, 81

Francical Das. (4) Balla and N.C.P. 美丽美 性難特別

rubicundus, Mar short

Tabana interesta . Mair. the Keen . in, 170 , of her. ed., v 277 , him, T. x S B la, 2011; Willy, the Dige, N & a. Mt; Kert., Cas. Phys., 65, 274 h., R. I. M. & 472 Lather aim, 12 of W. Mem Thed Ague, Ind. An. 1994 I monthly a great ep. 1. Sure., Gen. Inv. Pase, 175, 81,

Bracker " f. Privilly Valley (M E. 1.41 Kt , 2 4 相助 3 5 Petern Karlant. Marin. Peterskip takentie

Tabanus internes, Wik , Lind Dipt. B. M., 164. (1848)⁴; Wulp, Cat. Dipr. S. Asia, 60. Kert., Cat. Diga., id. 252. Atylotus mimilifer. Blot., Mem Son, Zeol. Fr., v, 651. 110001.

Tubanus monilifer, Wulp. Cat. Ditt. S. Asia, 63 : Kert , Cat. Dipt., iii. 202.

rubidus, Wiedemann

Tahanas rubidus Wind, Dat Exist. 69,1 (1821); rd., Ausser, Zarlill, Inc. i, 127-8 , Big., T. A. S. B. lx, 264 : Wulp, Leyden Mas. Notes, vii, 71 222; ad., Cat. Dipt. S. Arm. 59th; Kert., Cat. Dipt., in, 274; Rus. R L M . iv. 155-64; Khasis Hilles id., Bull. Ento Rev., vi, 1035; Claiger, Jo. Trop Vet. Sci., v. 60, [1sp. 1; Lefrov, Pusa Bull 7, 21, 6 [? sp.]: d'Abreu, Proc ifird, Ento. Meetg. Pusa, iii, 866, I caten by birds I; Aust., Bull. Ent. Res. xii, 448.7 | miscus Wlb and

Brangall, 3, 4 Alexander & Bornburg & C. Pilma. Sib-agat (Assault Partabouhr (U. P.) Nepal", " 'East India 18, 19 Trinco Ibst (Crylon Cruballu* Calcutta*

ringatulus Aust possibly culv forms): Surc., Gen Ins. Fase. 175. 82: Island. Mem. Dept. Agric. Ind., 1x (2) 22. 1ab. v, 2, 2a, 3, vi, 2, 2a, vii, 2, viii, 2a-e, f bionomies I; id., the cat., viii, 93, tab. xi, [larva].

abanus albimedrus, Wlk., Dipt. Saunds., i, 48 ⁸ (1850) , Big., T. A. S. B., kc. 264 ; Wulp, Cat Dipt. S Asia, 60, Kert. Cat. Dipt., in, 219, Rie., R. I. M., iv, 156-7, tab xiii, 89; Buru., Spol. Zeyi. vi, 170 . 10 Baldrey, Jo. Trop Vet. Sci., vi, 271-82.11 [transmission expts., f sp.]: Cragg, I. Jo. Med. Res., vir, 618-63, tabs. Izi-Iziii. [intesture], Cornwall & Patton, loc. cst., ii 560466, [salivary secretion]: Ric., Bull. Ent. Res., vi. 40512; Howlett, Ind. Ina. Life, tah, lxii, I-Ic, [life history], ed. Pusa Ser Repts., (1909-10), 71, Fletcher. loc. cit, (1915-16) 80, [biotecmies]. 82. [surra], id., her. cit., (1916-17), 96, [oviposition]; Patel, loc. cit. (1919-20). [parasites]; Fletcher, toc. cit., (1920-21), 47 48, [do]; Patt. & Cragg. T. B. Med. Ent., tab. ii. 7. [autenna], xiv, 2. [thorax], xv, 4, [medifurca], xviii. 5 [genitalia]. xxvii, 9, f, salivary gland], 285-9, 201, [feeding point] 297, [ovinosition]: Longstaff, 'Butterfly Hunting,' 38315; de Mello, Proc. 1vth. Ento Meetg. Pusa, 4111; Aust., Trans. R.S.T.M. & H., zv, 261, 15 | ohs R A E. (B) & 113], S. W., Mem. Dept. Agric. Ind., vii, 10516; Surc., Gen. Ins. Fasc. 175, 59.

Tabamis calidas, Wilk, Dipt. Saumis, 1, 57, 17. (1850); Wulp. Cat. Dipt. S. Asia, 60.

Itylotus lachrymans. Big., Mem. Soc. Zool. Fr., 7v, 669, 18 (1892).

Tikterate? Matlaran \$\$\$、\$\$\$ \$\$P 42 43 Gos (Post Ind) 14 Jhelun, Det 13 Ma-uri's Dharamedd (Fru w) Kangra (f resea) 1) Chuzimir Crimuit [Hopm (Char Burna) ('hapra (llihar) Buxar (Bibar) Combatore Rawalpundi Turn, mar Prohogar thrilln Khumbala, Khurda Khan Hills Rewilly Melmajour Kustanir Nonggah (Assam) Monbhua Delhi Cuttark Dora Ismail Khan Dunuraon (Ethar) Kasargode (* Kalard)

'! Asia ''

Java*, 18, 20

Sumatra!, *

F. M. S. 1, 7, 21

Sum!, *

Hong Kongh, * 12

Cochin China*

Aunami*

Taba an an Legacies Walp 1 st. 167.

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A. 176 (1 22). May, half her Be.

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Alghaus assume v. Big. Mea., v.c. Zool Fr., v. 653.- (1992 | Keat, 1984 Dipt., Id. 220)

Taba se concess, M. Marc, Sounds i Inchief and 184 T. A. S. R. 2017.
Walle, Car. Delt. S. Ann. 184 ; Kort.
Car. Dipt., iii. 247; Rie., R. I. M. Iv.
184 166; Shiraki Tainaku Papa, San.
Buli. (1818) 4475 (al. va. 184; Rec.
Bull. bare. 18 - vi 1977; Perel Proc.
Set Repts., 11910 von 177; Perel Proc.
Set Repts., 11910 von 177; Perel Proc.
Surc., Gen. Inc. Beet. 173, 64; L. ac.,
Mem. Dopt. Agric Ind., viii. 62, tab.
viii. 1 ? recognized p.

Talanus sanguneus Wlk., Dipt., Saundo., i, 54, ¹¹ (1850); Wulp. Cat. Dipt., S. Asia, 60¹²; Kert., Cat. Dipt., ni, 277; Ric., R. I. M., iv, 104-5¹⁴; Shiraki, Taihol. v. Evpt., Stn., Bult. (1918), 343 77; cah, vii. 6¹¹; Ric., Bult. Ent. Res., vi. 405¹⁵, Flotelor, Pura Sci., Rept.,

Professional and the state of t

(1915-16), 80 . Patel, *loc. ett.* (1919-20), 97, [parasites]; Sinc , Gen Ins. Fasc. 175, 83

sexcinctus, Ricardo

Tabanus sexometus, Ric., R. I. M., iv, 133, 1 (1911). Sluraki, Tanhoku Expt. Stn. Bull., (1918). 231-10, tab. v. 23., S. W. Mem. Dept. Agric. Ind. vii., 1043. Surc. Gen. Ins. Fasc. 175, 83.

speciosus, Ricard.

Tabanus speciosus, Rie, R. I. M., iv, 157-8, 1 (1911). Patton & Cragg, T. B. Med Ent. 289, tab. xl. 291, [feeding points], 297, [oviposition]; Suix. Gen. 148, Fasc. 175, 81.

Lushai Hills¹ Masuri³ [! sub-form]

Formosa²

Travancore¹
Traco Dist.¹ (Ceylon)
Madras (B. M. coln.)
[Hazambagh (Bihar)
Augul
Bombay
Cuddapah (Madras Pres.)
Chapra
Khurda
Santikoppa (N. Cong)
Combatore
Dumraon
Buxar
Bhagalpar.

striatus, Fabricus

Tabanus striatus, Fb., Syst Ent., iv. 371,1 (1794); id., Syst Antl., 193, Aust., Bull Ent., Res., xn., 4452, id., Trans. R. S. T. M. & H., xv, 264; Isaac. Mem. Dept. Agric Ind., vnu, 97-109, tabs., xit-xv, [bionomics, larval structure, adult gentalia]

Tabanus hilaris, Wlk, Dipt Saunds i, 49 tab ii, 3,1 (1850), Big., T A S B, lx, 264, Wulp. Cat Dipt. S. Asia, 603, Kert, Cat. Dipt., iii, 249, Ric., R. I M iv, 1536, id, Bull Ent Res., vi. 4077, Patt & Cragg, T. B Med. Ent. 294, I teeding point], 297 [oviposition], Patt, Arch. f. Protist. xv, 333-62, [Crithidia tabani], Fletcher, Pusa Sci. Repts., (1915-16), 80; Patel, loc

Kohat² Jhelum D 2 E India 1, 5 Pusa 6 Punjab⁶ Bombay⁸ [Hissar (Punjab) Belgachia (Bengal) Midnapur Angul Monghyr Rawalpindi Lahore Bhagalpar Suri Cuttack

Dahonganj (Bihar)

A- 41

cal., (1919-20), 97; Sure. Gen. Ins. Fasc, 175, 70

Tabanus partius, Wlk. Proc. Linn. Soc. Lond., 1, 9.8 (1856). Wulp, Cat. Dipt. S. Asia, 60; Letroy. Pusa Bull. 7, 214. Fraser. Jo. Trop. Ve. Soc. iv, 373, 375, 381-2 [infection expres. t sp.]. Pratt. loc. ett., v, 390-4, 10 [F. M. S. distribution]. Gaiger, loc. ett., v. 69.

Tabanus rufocullosus, Big., Mem. Soc. Zool. Fr., v 679 ¹² (18⁶2), Wulp. Cat. Dipt. S. Asia, 63. Purcha Linking (Purgel) Kathy data Usimbaton, J

Imepling Bacawan

subcallosus, Ricardo.

Theriophetes subvallosus, Riv., R. I. M., IV, 227-8.1 (1911).

Talmens subsettlesses, Baldrey, Jo. Trop. Vet. Set. vi 271-282.° [tran-mission-expts]; Sure Gen. In .. Face, 175, 85

Masimi Dalbonsort Nukterara

[Pogaon
Mostut
Mussfarnagar
Pera Dan (U.P.)
Pokokka (Hurma)
Palhousie
Danera hills (Curdaspur
District)
Kangra (Punjab)
Amparad (near Mukreaar).]

subcinerascens. Ricardo.

Tubanus subcinemiscens, Riv., R. I. M., iv, 215, 1 (1911); Sure., Gen. Ins. Fasc. 175, 85.

subhirtus, Ricardo.

Tabunus subhirtus, Ric., R. I. M., 1v, 219, 1 (1911); Surc., Gen. Inc. Fasc. 175, 85.

Atylotus cinerascens, Big., Mem. Soc. Zool Fr., v, 669,2 (1892), [nec King 1827].

Tabanus cincrascens, Wulp, Cut. Dipt. S. Asia, 63; Kert., Cut. Dipt., id, 231.

N. Chin Hillst

Bengal¹ . Bombay¹

Java

CATALOGUE OF INDIAN INSECTS

s, Jaennicke.

Tabanus sufis, Jaenn, Abhandl Senck. Punjab (B. M. Colla.) Naturf. Ges., vi, 332. 24,1 (1867); N. Africal 2. Verral, Br. Flies, v. 9 syst list app.) E. Africa²

11.2Tabanus albovertralis, News.

ebrosus, Walker.

Tabanus tenebrosus, Wlk. List Dipt B. Kanara¹, ² M., v, supp. i, 242, 389, (1854); Big.,

T. A. S. B., lx, 264; Wulp, Cat. Dipt. S. Asia, 60. Kert., Cat. Dipt., in, 285,

Rie., R I. M., iv. 203-4, 2 Surc, Gen. Ins. Fasc. 175, 86.

ens. Walker.

Not recognized since original description. Type redescribed by

Tabanus tenens, Wlk, Dipt Saunds, 1,

49,1 (1850), Wulp, Cat Dipt S. Asia, 60; Gaiger, Jo. Trop. Vet Sci, v, 69;

Aust, Bull. Ent. Res., xii, 445,2 [syno

Ricardo].

nomy] Big., T A. S. B., lx, 264, Kert., Cat Dipt, ni, 285; Lefroy, Pusa

Bull. 7, 213; Isaac, Mem. Dept. Agric. Ind., vin. 97, tabs x11-xiv, [larval

structure]; id., loc., cit, ix, 23, tab. v, 4, vi, 4, 4a, vii, 4, ix, 4a-e, [bionomics] ? Tabanus chinensis, Thun., N. Acta R. S.

Upsala, ix, 53, 62, (1827); Bezzi, Wien. Ent. Zeit., xxvii, vols. ii & ni, (1908) ? Tabanus costalis, Licht, Cat. 213, Ham-

burg, (1796); Aust., A. M. N. H., (8), Tabanus dorsilinea, Wd, Anal. Ent., 22,

10, (1824); id., Ausser. Zweifl Ins , i,

184, 10, Big., T A S. B., lx, 264, Novara

(S. Kanara) Combatore Berhampur

E. India¹

Madras²

Pusa8

 ${f Burma^8}$

Sylhet⁸

Manipur⁸

 $\mathbf{F} \cdot \mathbf{P} \setminus \mathbf{s}$

Dehra Dun¹³

[Kasargodu

Ceylon-general². ⁸

Bengal-general⁸, ¹³

Gonda D (U P)^s

Mohmand Pass (N.

S India-general 10 Goa (Port Ind)1t

E. Coast⁸, 12

Bassem³, ⁸, ⁹ (Bomb

Java4. 6 Sumatra⁵, 6

[dorsoliniae, laps]. ? Tabanus manilensis, Schin,

1, 346

Reise Dipt, 84, (1868)15; Wulp, Cat. Dipt. S. Asia, 61.

Tabanas megalops, Wik., La a Dipt. R. M. v. supp. i. 217, (1854). Walt. A at Dipt. S. Asia, 53

F. M. S.

Tabanus winder Wid. (are They They Exot, 79, al., Anser Zwent Inc. i 155. Willy Dige Summer P. is, the id., Leyden Mus. Notes, vii 619; of . Cat. Duct. S. Asia, 58"; Kert., Cat Dipt., in, 281. The . R. L. M., w. 173 173", Caler in Front Lit 891. 5. 69 John In C. 11, 11 7 5 Howlest Ind. Inc. Lite 1 1 1.4, 2. Mitsanda, Balt Li, Pall 15 Pept. information of source for the Police To, See (16) val. 28 v. of., 5c. v.t., val. 407 234 talm 1-14, 1 the hittery , 1 there ex R Int. test to the company the Patton & Crang, T. B. Med. Pat. 25%. Met. Inveling jain at, Mil, Invipe ition |; Fietcher, Puss Sci. Repts (1915-16), 79, 1 no. of broods?, 12. [urra] de Milla, Proc ich dat -Mortg Phys. 122, Doney, R. I. M., Keit, 3949; S. W., Ment Jun Agric Ind. vn. 19512 . Sur . Con. R.s. Pasc. 175. ₩.

The above represents Major Auston's views on the synonomy of the species generally known a diamo. Their correctness turns on whether the specimion at Kiel or at Copenhager is the actual type. Major Pation holds diametrically opposite views on this point to Major Arden and if the former is proved correct, the actual synonomy will need reversing to that given by Rienrdo in R. I. M., r., 148-153.

trinominata, non nor

Atylotus angustus. Big., Hem. For Zool. Fr., v, 6521, (1892). [see Mary, 1838].

Judiet 2

CATALOGUE OF INDIAN INSECTS

Tabanus angustus, Wulp, Cat Dipt S. Asia, 63, Kert, Cat. Dipt., in, 221, Surc., Gen Ins. Fasc. 175, 60 Tabanus palpalis, Ric, R. I. M, IV, 212-3, tab xiv, 19, 201, (1911), [nec Brethès,

1909]. Not recognized since original description. Type redescribed by Ricardo.

[transmits surea [; Waterbo in Aitch , Zool Afghan Dehmit Comn. 1313

These records probably refer to more than one species Unless the specimens with which these authors worked can be found, the references will have to

Tabanus tuberculatus, Ric., R. I. M., iv,

Tabanus virgo, Wd., Anal. Ent., 221,

(1824), id., Ausser. Zweifl Ins., i, 184;

Big., T. A. S. B, Ix, 264; Wulp, Cat

Dipt. S. Asia, 592, Kert, Cat. Dipt, in, 202, Ric, R. I. M., iv, 1363, Patt.

& Cragg, T B Med Ent, 297, [ovi-

position], tab xlii, 13-16, Fletcher,

Pusa Sci Repts , (1916-17), 96, [ovi-

position], Patel, loc cit, (1919-20),

100; C. Vet Dept Mem 2, tab. u. 74,

Fletcher & S W, Proc, 1vth. Ento

Meetg Pusa, 226; Aust., Trans. R. S.

T. M & H, xv, 2647, | abs R A, E. (B), x, 143], Surc., Gen. Ins. Fasc.

220-11, (1911), Surc., Gen Ins. Fasc.,

nicus, aucet Ind. neo Panzer (1791) Tabanus tropicus, Lingard, Jo. Trop Vet.

271-821, [transmission expts],

Schat. S. S. Bur. Bull , 15, vol. n3,

Sci, 1, 92-1121, Baldrey, loc cit., vi,

remain doubtful

erculatus, Ricardo

175, 87.

o, Wiedemann.

Kathgodam¹

(both Himalaya)

Padda Sultan (Helmai

Companiganj (Sylhet)

Belgatchia (Bengal)¹

[Villupuram (S. Arcot Stehanda (Kistna)]

 $Muktesar^2$

Java³

Pusar

India¹, ², ⁵, ⁶

Mohand (U. P.)*

Kangra (Crosse)

[Chapra (Bihar) Chicacole Road (Mad

Presidency)

Kotla (Crosse)

Vizianagram (S. W.)

D Ghazipore (Crosse

Jhelum Dist 7

Madras¹

Mysore³

Calcutta³ Pusa³

175, 88, Isaac, Mem Dept Agric. Ind., ix (2) 21, tab. vi. 5. vii, 5, x, 5a-c, [bionomics].

Tabanus albalus, Wlk, Dipt. Saunds, i, 465, (1850); Big., T. A. S. B., ix 254. Wulp, Cat. Dipt. S. Asia, 60, Kert., Cat. Dipt., iii, 220.

Tabanus muella, Wik., Dipt. Saunds., i. 538, (1850); Big., T. A. S. B., lx, 261; Wulp, Cat Dipt S. Asia, 60; Kert., Cat Dipt, iii, 271.

wyvillei, Ricardo.

Therioplectrs wgadlei, Ric., R. I. M., iv. 229-30¹, (1911).

Tabanus wynillei, Surc., Gen. Ins. Fasc. 175, 88.

Suri (Bihar) Sohawa (Punjeb)

Hazaribagh Hawalpanii Kharda Cartaek

Contack Barolly

Puruliz (Bilaer)

Angul

Bhowrah (Champaran)]

Narkatela! Karoah! thoth W. Hitax-

firmer)

5. Neotabanus, Ricardo,

Neotabanus, Ric., R. I. M., iv. 363, (1911); Surc., Gen. Ins. Fasc. 175, 93. There is an invalid sub-genus of Talanus of the same name, creeted by Lutz.

ceylonicus. Ricardo.

Neotabanus regionieus, Rie., R. I. M., iv, 363-41, (1911); Surc., Gen. Ins. Fasc. 175, 93

Pundaluoya (Crylon Mts.)*

PANGONINAE.

Ric., A. M. N. H., (7) v. 105-121 167-181, [revision, tables of genera]: Shiraki, Taiboku Expt. Stn. Bull., (1918), 9, [notes on sub-family]: Surc., Gen. Ins. Fasc. 175, 91-5, [key to genera of World].

6. Corizoneura, Rondani.

Corizoneura, Rond., Arch. Zool. Anat. Fisiol., ni, 85, (1864); Ric., R. I. M., iv, 365; Shuraki, Taihoku Expt. Stn. Bull., (1918), 17-18; D.-Brock., Bull. Ento. Res., 1, 55-6, [an African

CAPALOGUE OF INDIAN INSECTS

rsp. a bad animal biter]; Aust, loc. cit., xi, 139, [the sub-divisions of Pangonia Latr.]; Patton & Cragg, T. B. Med. Ent., 294; Sure., Gen. Ins. Fasc. 175, 125.

KEY TO THE INDIAN SPECIES OF CORIZONEURA.

Proboscis much longer than the whole body 2
Proboscis scarcely longer than the body . tapiobanes Wik.
First two joints of front tarsi modified, longirostris Hardw.
widened in both sexes.

First two joints of front tarsi simple .

longirostris var. 19

agirostris, Hardwicke.

Pangonia longivostris, Hard., Trans. Linn. Soc Lond., xiv, 135, tab vi, 5, 6!, (1823); Wd., Ausser Zweifl. Ins., ii, 621, 142, Gay in Griff., Cuvier's Règ. Anim, xv, tab exiv, 3, Maeq., Anin. Soc Ent. Fr, vi, 429, tab. xv, 20-23; Wlk., List Dipt. B. M, i, 131, id., loc. est., v, suppl. i, 139, 101; Roder, Stettin. Ent. Zeit., xlii, 3843, [redescr.]; Wulp, Cat. Dipt. S. Asia, 64; Kert, Cat. Dipt., iii, 173; Ric., A. M. N. H., (7)v, 167-8; Tetle, Bull. Ento. Res., viii, 253-267, tab. vi, 11t. figs., [structure of mouth parts], Howlett, Ind. Ins. Life, tab. lxii, 3,

Corizoneura longinostris, Ric., R. I. M., iv. 365-64, Mitter, I. Jo. Med Res., v, 522-8, tab., [method of feeding]; Big, T. A. S. B. Ix, 264; Aust., Bull. Ento Res., xi, 139-152; Surc., Gen. Ins. Fasc. 175, 134.

subsp. varipes, Ric, R. I. M., iv, 3675, (1911).

Pangonia amboinensis, aucet. nec. Fah., Big., T. A. S. B., lx, 264, Wulp Cat. Dipt. S. Asia, 647; Ric., R. I. M., 1v, 369. Nepal!, 2
Allahabad?
Muktesar (Himalay
Tibet4
Sikhim?, 6 ?
Trivandram (Trs
core)?
Sadiya Dist. (Assan

Shillong

Simla.

Masuri.

taprobanes, Walker.

Pangonia taponismos Wike List 1974 B. M., v. suppler, 1984 (Product Weige Cat. Dipt. S. Asan, 145 Kest, Cat. Dipt., ui, 74 (Ric. A. M. N. H., 148), 167-8.

Contoneuro temobras, Arc., R. J. M., iv, 367-82; Aust., B. J. Ento, Roy, R. J. 139-132; de Mella, Proc. 18th, Entr. Mosta, Pu. 15th, Sant, Gov. R., Fase, 177, 134.

Pangenar ofa, Mat p. D.; A. a. suppl. iv. 188. (1800), [van d., 1808].
 Kert , Cut. Light in, 160 Br., A. A. S. B., Ix. 261; Wall, Cat. Dipt. S. Asia, 61; Sure., Cen. Inc. Phys. 8 129.

Howard A. Roman Property of the Colors of th

T. Gestruxidos, S.: inlin.

Gestie rales, Saurals, Trans. Let See Lond., in, 59, (1844); Kert., Cat Dept. iii, 181, Ric., R. I. M., 10, 176, Socie, ther Ins. Fasc. 175, 137 Ditylor, pat., Rig., Rev. et Mag. Zool., (2) A1, 305, (1855)

KEY TO THE INDIAN SPECIES OF GASTRONIDES

Thorax and abdomer blod, laster in ;
 with basal segments brigh, rate is

Thorax brown with 2 yellowish stripe. Abdomen in 2 black, 1st and ird. segments with yellowish, 2nd, and ith with grey hind horders, remaining segments with some red at sules. In 3 abdomen reddish, shining, a median black spot on each side of first 3 segments, and 2 extra lateral spots on last of these, 2nd, segment narrowly black laterally, 4th, black, posteriorly dull yellow; remainder black.

tele i withitely

ornatas Big. .

ater, Saunders

Gastronules ater, Saund, Trans Ent Soc Lond , m, 59, tab. v, 11, (1841) , id , loc. cit, iv, 223, tab xiv, 3; Wlk, List Dipt. B. M., i, 200, id, loc cit. v, suppl i, 293, 1 Lw , Dipt Fauna Sud Afrik., 1, 15; Wulp, Cat Dipt S Asia, 64², Ric, A. M. N. H, (7) vin, 298, id , loc. cit , (7) xiv, 372; Keit , Cat. Dipt , m, 181; Ric , R. I. M., iv, 370-1; tab. xvi, 9, Howlett, Ind Ins Life, tab Ixii, 4; Fletcher, Pusa Sci Repts., (1915-16), 81, [bionomies]; id, loc. cit., (1920-21), 21, 19, [teoc-hole breeder], Surc., Gen Ins. Fasc. 175, 137, Lab v, Ga-b; Isaac, Mem. Dept Agric. Ind , ix (2), 25, tab. vi, 3, vii, 3, ix, 3a-e, [bionomics].

Central India¹, ²
Celcutia⁴
Pusa⁵
Coimbatore (B. M. colln.)
[Chapra
Fyzabad (U. P.)
Surat]

Carlon

Colombo²

ornatus, Bigot

Ditylomina ornatus, Big, Rev. et Mag. Zool. (2) 21, 3061, (1859); Wulp, Cat. Dipt S Asia, 63

Gastroudus ornates, Ric., A. M. N. H., (7) Heneratgoda (Ceylon xiv, 372, Kert, Cat. Dipt., iii, 181, plains2)
Ric., R. I. M., iv, 371-32; Surc.,
Gen. Ins. Fasc. 175, 137.

8. Silvius, Meigen.

Silvius, Meig, Syst Besch, ii, 27, (1820), Wd., Ausser. Zweifl. Ins., i, 93; Macq, Dipt. Exot, I, i, tab. vi, 1; Schin., F. Austr., i, 43; Ric., A. M. N. H., (7) vin, 290; Sure, Bull Mus. H. N. Paris. ii, 46; Kert, Cat. Dipt., ni, 177, Ric., R. I. M., iv, 373, Shiraki, Taihoku Expt. Stn. Bull., (1918), 10; Patton & Cragg, T. B. Med. Ent., 292; Hill, Bull Ent. Res., xii, 59-62, figs., [bionomics of an Australian sp.], Sure., Gen. Ins. Fasc. 175, 141.

Erodiorhynchus, Macq., Dipt. Exot., I, 111, tab. vi, I, (1838)

? Philoliche. Wd., Aurser. Zweiff Ins., I, 95, (1828).

indianus, Rieardo

Silvius indianus, Ric., R. I. M., iv. 3741. Bhuva (Nam. Tal. D.)4 (1911); Surc., Gen. Ins., Fasc. 175, 143.

9. Melissomorpha, Rharde

Mclissemorpha, Ric., Proc. Zool. Soc. Lond., (1906), 97; Surc., Gen. Ins. Fasc. 175, 145.

indiana. Rucardo

Melissomorpha indiana, Riv., Proc. Zool. Daviding! Soc. Lond., (1906), 98, (1966); Surv., Gen. Ins. Fasc. 175, 146, tab. id. 124.

10. Chrysops, Mangen

KEY TO THE INDIAN SPECIES OF CHRYSOPS.

[adapted from Ricardo].

	4 2	•	
I.	Wings with a dark transverse band and an	. •	
	apical apot	e d	
	Wings with a dark transverse band but no		
	apical spot	flavicinclus Ric.	
2.	Wings with a hyaline sinus in the band in	Ŧ	
	5th posterior cell	3	
	Wings with no hyaline sinus in band in 5th		
	cell	8	
3.	Abdomen yellowish, with black stripes		
	Abdomen black, whitish or yellowish at		
	base	7	
4.	Discal cell hyaline	**	
	Discal cell not byaline	6	
5.	Abdomen with four long black stripes	młokosiewiczi Big.	
	Abdomen with a black bitid stripe on 2nd.		
	segment	flampes Big.	
6.	Abdomen with short, black, bifid stripe on	T M. Now	
	2nd. segment, often extending to 3rd.		
	or 4th	dispar Fb.	Á

CATALOGUE OF INDIAN INSECTS

Abdomen with bifid stripe on 2nd. segment.	
and a network of black markings on	
3rd., leaving only three yellow spots	
free	designatus Ric.
Abdomen black, 2nd segment yellowish on	
fore border. Face blackish. Apıcal	
border of wing band straight	pellucidus Fb.
1st. abdominal segment yellow, with	
median black spot 2nd. yellow, 3rd.	
blackish, yellow at sides and with 3	
yellow spots. 4th6th. segments	
black. Face black. Transverse band	
of wing irregular on both borders .	petligreur Ric.
A clear spot in discal cell. Abdomen	•
blackish with pale spots	stimulans Wlk.
No clear spot m discal cell	9
Abdomen yellow, 2nd. segment with a	
black bifid stripe	indianus Ric.
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middle	10
. Legs and face blackish	fasciatus Wd.
Legs and face yellowish brown	fixissimus Wlk.

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